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Keywords: child sexual abuse; disclosure; social support

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Figure 1

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Abstract

The Journal of the Royal Naval Medical Service is published five times a year in April, August and December, and volume comprising three issues. Subscribers are reminded that the latest subscription has been increased from 1 January, 1971. The new rates are as follows:

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The Knee Signature System: a preliminary report

Sarah Smallbone and S. L. Hodgkinson

Summary

The knee reports on the early results obtained using the Knee Signature System before it is ready for widespread trials.

INTRODUCTION

Three orthopaedic centres in the United Kingdom have had their own systems for dealing with a range of knee injuries. Frequently following rupture of one or other cruciate ligament usually the anterior. During the year 1987-88, 100 patients were admitted to RMO, Manchester to deal with knee injuries.

Despite all earlier systems in vogue and there is good evidence to suggest that this is followed by permanent joint dysfunction including a variety of secondary symptoms: reduced laxity and progressive degenerative changes^{1,2}. Description of the anterior cruciate ligament (ACL), which provides 56% of the primary restraint to anterior tibial movement³ has been described by one of the most common and disturbing injuries to the knee⁴.

Accurate evaluation of such instability is often difficult, yet really important in understanding the nature of the injury is fundamental to any successful reconstructive procedure⁵. Traditionally clinical examination has been the only means of assessment but surgery has been found to vary from as little as 50% to 85% in acute ACL and posterior cruciate ligament (PCL) injuries⁶.

There have been cases to suggest that

arthroscopy made diagnosis possible without open surgery^{7,8} but this is still an invasive technique requiring anaesthesia, while evaluation using such methods in the RMO has typically required repeated diagnostic arthroscopy by two separate teams.

Early classification of knee ligament injuries was based on instability in one plane and it was not until 1948 that Stoenen⁹ introduced the concept of rotational instability by their employing a drill in the axis of symmetry in the form of a descriptive classification based on rotational flexibility and clinical examination. Recently rotational instability has been defined and the need is to understand the structural basis for the functional observations and hence establish a means for treatment¹⁰.

The Medial Collateral Ligament Control¹¹ has adopted the following methods of studying knee ligament injuries:

- i. Isolated anterior joint loaded, flexion tests only; after ligaments have been secured, clamped or divided.
- ii. Correlation of operative findings with pre-operative clinical statements.
- iii. Correlation of instability patterns and analysis of forces acting to deform the knee.
- iv. Definition of operative findings with respect to particular ligaments.

Now that ligament injury testing devices such as the KT-1000 System knee injury device^{12,13}, Clinometer¹⁴ and KSG knee flexion instability diagnostic¹⁵ and KSG knee flexion instability diagnostic test. The KT-1000 has been used to assess patients^{16,17,18,19,20} but a recent study has suggested that the results obtained are not reproducible²¹. The KSG has been shown to

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compare favourably with those other likely testing devices?"

LINE SIGNATURE SYSTEM

The *Active Line Signature System* is a laboratory method which can be used to measure leg length, leave in normal subjects and those with ligament injury. The heel, tibiocally and the patella are taken as reference points. In case of the measured relationship between the patella and the knee movement of the knee relative to the femur can then be measured. Measurements are made by two stereoptical projectors, linearly accurate potentiometers which enable movement in space and movement in an electrical potential. They measure movement in relation to the three cartesian co-ordinates and also rotational motion. The two sets of potentiometers are held rigidly at the lateral side of the knee using femoral and tibial frames, which can be pivoted slightly. The following measurements using the knee joint are, therefore, not measured in relation to each other: anterior-posterior tibial translation, flexion-extension, varus-valgus rotation, internal-external tibial rotation. The movement results in input to a computer, which shows storage and printing, of results in graphical form.

Both static and dynamic measurements can be made thus allowing a two separate assessment of knee ligament dysfunction, to start with resting diagnosis. The degree of instability and the presence of any functional element determines the treatment offered, as the ability to diagnose instability is essential. Rapid and efficient diagnosis aided by X-ray testing, not only benefits the patient but also saves time for the practitioner and reduces the costs hospital and surgery. X-ray testing can also be used to assess treatment and has great potential for research into ligament injury and the knee variations seen in normal knees.

This paper presents results obtained, shown by the graph pattern typical for particular injuries. Individual static and results will follow in a later stage. These measurements need now be described. The first two are designed to test the anterior ligament injury, while the third is used to detect medial collateral and lateral collateral injuries, which although less damaging to the ligament are nevertheless reasonable conditions which may occur, injury. In each case the injured knee must be compared with the un-injured knee. It has been shown that, in 50% of normal subjects the difference in anterior

tibial displacement between left and right knees, after the application of an 80N force is less than 1mm, while 94% of patients with a unilateral diagnosis of the ACL had an injured knee—tibial knee difference of more than 2mm.¹²

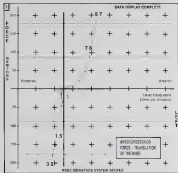
Anterior-posterior tibial translation (Lachman or Drawer test)

Movement of the tibia relative to the femur can be measured during a simulated drawer test in which a force is applied to the tibia by using a force bar. This contains a transducer which measures the pressure created by anterior and posterior to give a measurement of force applied to the leg. Pushing against the tibia just below the tibial tubercle into the cavity of the PCL and pulling forward on the tibia just below the patellar ligament tests for ACL. (Fig. 1a). The directional test is made at any angle of knee flexion between 0 and 90 degrees, and the computer graph shows tibial translation in knee movements on the horizontal axis and force in 50 Newton increments on the vertical axis measurements being made at 15 and 30N.

Both the absolute values and the slope of the curve change after an injury. On the y-axis of the ACL, the normal is different degrees of knee flexion and moving in several positions not demonstrated, which part of the ligament is damaged in normal response. External or internal rotation of the knee allows for further medial or lateral tibial translation by the examiner shown below measurements were made with the knee at 35 degrees of flexion and with the foot at the neutral position.

It is assumed that there should be no change in the positional relationships of the tibia and patella with the femur during any passive examination and for this reason, difficult as it may be to achieve, the patient should be fully relaxed. If there are any changes, eg. drawing a Lachman test the knee never falls into the values of the normal joint and the translation measurements in 50 and 100N force will be abnormal.

Fig. 1A shows the Lachman test performed on an un-injured knee. Anterior tibial translation is seen as the upper right hand curve quadrant and movement on the lower left hand side quadrant represents posterior tibial translation. The absolute values are well within the observed normal range (now unpublished observations). A very important feature of the interpretation of the graph is the change in slope observed at approximately 25N force. This



NOTES

Fig. 14 Lachman test: anterior/lazy

level and point, so ignored that a dry indicator as ACL, with normal stiffness and function.

Fig. 14 shows the Lachman test carried out on a knee with an automatically passive ACL response. It can be seen that there is no increase in the absolute value of the anterior tibial translation and also a change in the shape of the curve at the sub-apex level. In this case there is no level and point and the change in gradient is much more gradual showing a decrease in ligament stiffness.

Fig. 15 shows the Lachman test performed

on a PCL deficient knee where changes in both absolute values and gradient are seen in the quadrants. This pattern also demonstrates some ACL laxity but the hard end point coincides with the obvious PCL injury suggest that the ACL is intact.

However, it is not always easy to distinguish between ACL and PCL injury as the knee is possible to replicate the way of the knee which is indicative of PCL rupture, as each knee it may appear that the ACL is damaged and the PCL normal. An example is shown in Fig. 16. The



Fig. 1B: Lachman test: ACL-deficient knee



Fig. 1C: Lachman test: PCL-deficient knee

tests for the ACL shows normal ligament stiffness at high force and a definite end point (at approximately 300N force) but the end point is not seen until 11mm of anterior tibial translation. If the ACL were ruptured, this end point would not be seen at a zero normal and there was no PCL involvement; the end point would occur at a much lower anterior tibial translation value. The combination of apparently normal PCL and delayed ACL end

point with normal ACL stiffness seen in PCL damage. Clinical examination of this patient showed a definite end point and the PCL rupture was confirmed at arthroscopy. This graphically shows the case which gives the basis for interpreting the results of KSS testing, which should be viewed in conjunction with clinical examination.



Fig. 1D: Lachman test: PCL-deficient knee diagnosed as ACL-deficient

Fig. 1E shows the gross laxity observed in a patient with both ACL and PCL rupture, a very serious although rarely observed condition.

Fig. 1D shows a knee with an apparently normal anterior tibial translation, which had both an onset of an ACL end endpoint and with a deeper normal profile than seen in Fig. 1A. This demonstrates the early postoperative results on a patient who has undergone ACL reconstruction. The ligament stiffness is greater than that seen in a normal ligament at this stage, particularly at low force values where no end point is seen. With time, as end point was apparent at some of the initial stiffness is lost, and the appearance of the trace may then become more like that for the unoperated knee. Experi 1992 has shown that, in some patients a small end element at low force may occur with time, but that the stiffness at high force values must be maintained. It has been suggested that in



Fig. 16: Scatterplot ACL & PCL deflection knee



Fig. 17: Scatterplot ACL reconstruction knee

persons who have undergone systematic ligament reconstruction, changes in stiffness and the introduction of a brace add points that are more important than the absolute knee values in evaluating the symptoms of instability¹⁰. After half or at least then the observed increase in anterior tibial displacement after tension ACL reconstruction as recorded with the UCLA device had no correlation with symptoms of giving way or recurrence of the pre-injury. This

added a substantial improvement in stiffness at 3000 N and postulated that this may be important to the patient as a subjective indicator of improvement.



Fig. 18: Scatterplot ACL deflection knee and brace

The RMS can also be used to compare the results obtained from an injured knee when braced and non braced. Fig. 19 shows a non-braced ACL deflection knee and Fig. 18 the knee brace with a brace. It can be seen that there has been a substantial reduction in anterior tibial translation, but a slight increase in posterior tibial translation. The brace in question was a 4-point brace designed to provide the tension reduction of the knee which occurs in the ACL deflection knee. It would appear that as long as the knee has been encouraged to shift posteriorly as shown by the increased posterior tibial translation produced under brace. This effect is consistent although not always observed.

Fig. 19 shows the test results for a patient with ACL and PCL injury with the knee non-braced. Fig. 19 shows the brace knee and in this case the brace designed for the symptoms of combined ACL and PCL instability has reduced both anterior and posterior tibial translation.

Some caution must be exercised in the testing of the brace knee and in the interpretation of results. It is quite hard to take these accurate measurements at the edge of the knee brace when



Fig. 18 Lachman test: ACTL relation (active test in 50° flexion)



Fig. 19 Lachman test: ACTL & PCL study (active test in 50° flexion)



Fig. 20 Lachman test: ACTL & PCL study (50° flexion)

their correct positioning of the BSS sensors, very difficult, and some points of knee flexion are more indicated than others.

Active-passive flexion-extension test

In this test the BSS displays the anterior/posterior motion of the tibia as a function of knee flexion. The patient is required to extend the

knee from 90 degrees of flexion to full extension, and then return to 50 degrees of flexion. The patient is then asked to relax and the knee is passively extended from 50 degrees of flexion to full extension in the computer.

The graph obtained shows the effect that translation of the hamstring and quadriceps muscles has on tibial movement. The test on the graph produced by quadriceps contracture is compared with the data to passive motion which acts as a baseline. Knee flexion is shown on the y-axis from 90 degrees of flexion to 10 degrees of flexion, and the horizontal axis shows tibial translation in mm. This graph is used to measure tibial translation, in the horizontal dimension, between the active (on the right) and passive (on the left) knee.

Fig. 21 shows this test carried out on an unoperated knee with only a small horizontal distance between the active and passive knees.

In the ACTL, different than a large horizontal distance (compared with the unoperated knee) is observed between the active and passive knees in the 30–50 degree range. The anterior knee movement on the graph in the knee is relatively extended from 50–0 degrees of flexion in the anterior on the knee at neutral flexion by the quadriceps muscle. This is demonstrated in Fig. 22 where there is substantial separation between the active and passive movements and an obvious anterior shift on the active knee at approximately 30 degrees of flexion.



Fig. 14 Pseudo-random test, unpaired test



Fig. 18 Pseudo-random test, AEL, different test

As entrance test is sometimes used on the pattern test, this demonstrates that the pattern has contained the gridwork and as the entrance test should be repeated and the pattern should remain in view more fully during that part of the test. Unless usually some routine test is very difficult to view and allow the entrance to make the test.

In the PCL, different lower segments of the acute and obtuse lines of increments appear in the lower portion of the graph in the 50-70 degrees of flexion range. The pattern has diverged from the acute in the phase extended because the function of the PCL, which is to prevent pattern shift has been reduced or eliminated. That is shown in Fig. 17, where separation between acute and obtuse lines is not much wider than at Fig. 15 and there is no dramatic entrance and separation on the acute line.



Fig. 20 Pseudo-random test, PCL, different test

When the test is viewed in conjunction with the Lachman test a good clinical picture is given and clarity as to whether the pattern has AEL in PCL, finally can be obtained. It is more important to examine these results together to prevent drawing false conclusions.

Verne-Julius test

In this test the Kist displays lower flexion as a function of knee-joint motion. On the vertical axis, lower flexion is shown in 10 degree intervals from 30 degrees of flexion to 70 degrees of hyperextension while the horizontal axis shows knee-joint extension in 5 degree intervals. The test can be carried out at any angle of knee flexion between 70 degrees of flexion and 10 degrees of hyperextension.



Fig. 14. Wave-ridge test, upright knee

Fig. 14 shows the test performed on an upright knee. The vertical line is a reference point observed by fixing the knee slightly in the axis of the test. However, injury can be seen in terms of wave-ridge (especially for test in Fig. 15) or both (as seen in Fig. 16).



Fig. 15. Wave-ridge test, ridge injury



Fig. 16. Wave-ridge test, wave & ridge injury

Figs. 15 and 16 show the reduction in lateral movement observed when an ACL deficient knee is treated on a knee with rigid ligament. It is clear that the knee shows the wave-ridge knee, the knee the lower knee (1) is obvious that these knees, primarily designed to control anteroposterior (A/P) knee translation, also provide lateral stability in the unstable knee. This suggests that they have a useful passive role in providing additional stability to a knee which is already in risk of acquiring further damage by the very nature of its A/P instability.

DISCUSSION

Experience has shown that these three simple tests as recommended by Hughes² give a useful indication of the ligaments involved in an injury and the severity of the damage. More tests can be used for post-operative stability required, but in a routine clinical situation this is rarely necessary.

One of the criticisms that has been directed towards the ACL machine is made in lack of repeatability. But our experience has shown that repeatability is good provided ligament continuity is maintained. However, greater reliability is necessary and results may be affected by post-operative pain for some time after the event. Some of the test results have been obtained on the operating theatre, both before and after surgery when the degree of stability is most easily measured.

It is accepted that instruments such as the



Fig. 20. Knee signature test. ACL deficient knee (see text).



Fig. 21. Knee signature test. ACL deficient knee (see text in text).

KSS will not replace clinical assessment, examination, and/or assessment or arthroscopic views (Knee). However, they do have a role in diagnosing, over a period of time, the degree of stability. Clinical, ligament reconstruction procedures. It is felt that the KSS is of particular value where there may be combined anterior and posterior cruciate ligament injuries with rup-

ture of one and stretching of the other. Overall, surgeons for clinical examination or through with difficulties in these cases where KSS testing can be diagnostic in many of them.

We are following both the postoperative patients, those treated by reconstructive surgery and those who have been treated with a period of time in order to assess the degree of injury that develops. There is good evidence that patients treated postoperatively demonstrate both functionally and radiologically, particularly if they have undergone arthroscopy.^{1,2,3,4}

Most research has still to be done on the long-term assessment of anterior cruciate ligament replacement. It is not known how and how ligaments will stand up to the rigors of stress, although there are some several surgeons who have had success in ligament replacement with knee ligament replacement in place for the past five years and continue to function normally in a sporting category. Four years follow-up of posterior ligament reconstruction, reconstruction has already high lighted the importance of ligament stability in terms of overall outcome.⁵ The KSS is being used to research both conservative and surgical treatment of ACL and/or PCL rupture. Ligament reconstruction has enabled the modified tests procedure the four patients which took the KSS (W Knee Injury) ABC (Surgery) and Apex (Knee) (The KSS) post-operative ligament and the Kennedy ligament reconstruction device (KSS).

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Case report: A case of rectal perforation by foreign body presenting as pyrexia of unknown origin

J K Campbell

INTRODUCTION

Cases of rectal foreign body are reported and many cases, even on the sporadic, it is usual for the patient to present first at hospital, usually only to be removed soon, generally with a relatively unproblematic recovery. A case is presented where the patient did not submit to removal of a foreign body and proceeded to surgery late, with complications after emergency work in the medical department.

CASE HISTORY

A 22 year old man presented to the medical department from his general practitioner as a case of RUD. He gave a seven day history of peristaltic symptoms, increasing at times abdominal discomfort and abdominal pain at the end of his meals. Thorough history excluded haemorrhage and spurring-collapse the possible causes of upper linked to central and infection source of his pyrexia of 38°C. Urinalysis showed 100% glycosuria and he had a uraetophyl leucocytosis of 147. He was treated initially for urinary tract infection with oral ampicillin.

After two days of observation his symptoms were clearly begun to show classical signs of intestinal gas with a pain and bough dist. His abdominal pain began to increase in severity although remaining constant and in the

lower abdomen, in a distended hard gel pain. A surgical opinion was sought of a general surgeon (the author) who could suggest the evidence of extra-abdominal pathology on obvious examination including proctoscopy. It was noted that he had had a marked tenderness in lower abdomen since his illness began. Abdominal radiographs (Figs 1 and 2) showed no obvious features on initial examination other than marked focal loading.

Four days after admission his pyrexia had still subsided and the pain became more right sided with signs of local perforation. The patient refused to undergo an appendectomy.

An exploratory incision by the midline (midline) the abdomen was explored through a Graham incision. A non-inflamed retro-caecal appendix was removed without complication and a non-inflamed Meckel's diverticulum was noted. Further inspection of the pelvis revealed evidence of local pelvic signs with the rectum adherent to the posterior superior aspect of the bladder. Attempts to detach the adherent rectum revealed a full thickness colicenter perforation of the rectosigmoid junction from which there was delivered the top of an inverted cone of tissue 5 cm x 3 cm cylindrical in shape and open at the distal end. The perforation was corrected across the right rectus abdominis and the area exposed was covered by a Hartmann's operation with formation of a left gas rectum and colostomy. Autopsy examination of the abdominal films (Figs 1 and 2) showed the offending object clearly. Handle.

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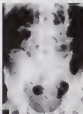


Fig 1 Abdominal radiograph—cecum.

laid distal to the ileum, distal to a 1 cm, subacute perforation of the caeco-cecal junction. The man made an unremarkable recovery.

When confronted with the facts as well as with the physical evidence, the patient's story was increasingly credible. He claimed to have slipped while getting out of the bath some eight days prior to admission and twelve days prior to surgery, falling outside the bath onto his back in which he declined to adhere upon promising to let G.P. or an subsequent physician questioning by hospital doctors.

Two months later, he underwent removal of Hartmann's procedure by the same surgeon with revision of his Meckel's diverticulum.

DISCUSSION

Perforated large bowel shows an uncomplicated although it is more usual for the patient to present early. Anxiety about the risk of damage to the large bowel usually motivates the obvious embolism cases. Patients do not always admit directly to having perforated a large bowel but tend to admit to symptoms which at first



Fig 2 Abdominal radiograph—cecum, gas the cecum going down on the right track! Much volatility was noticed in the patient on quite properly admitted to thorough medical management for 48/72. This delay led to the unusual occurrence of necrosis for this problem. More usually the diagnosis is evident before perforation set in! For the author, this unusual case proved to be a valuable learning experience in respect assessment and technique.

Abdominal pain at the end of Meckel's mass alone, alert the surgeon to the likelihood of pain being caused in the case by the perforated ileum adjacent to the Meckel's. More usually this is caused by an inflamed pelvic appendix.

Review of the radiograph demonstrates the value of a properly interpreted upper abdominal radiograph the cecum (caecocolon) which represents the large bowel was dilated as bowel gas. It is at first the initial shape is flat, the area of Fig 1 (and supra Fig 2) then, and does not move. In this case clearly neither the appendix nor the Meckel's diverticulum was the source of the upset demonstrating the importance of persistence of operation until the source is found, if necessary through a much extended incision as described above.

The operation would have been considerably easier and the diagnosis more readily apparent had it been performed through a lower anal fissure incision, which would have been a safer choice in the light of the patient's history.

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A general practice trainee in Kurdistan

S. V. Redland

INTRODUCTION

In contrast with many general practice trainees, a component of my sponsored training lasted a year of experience, and it was at its completion that I found myself deployed to Kurdistan Iraq with the Human Support Team (HST). The HST's primary role is to provide second line medical support to 3 Commando Brigade during war. But Operation Falklands also posed a humanitarian task for the Team. The Royal Air Force, in cooperation with the Allied Forces, had been making significant advances of Kurdistan. Once established it was hoped that the safe zones would encourage the stranded Kurds to return home from their thousands of refugees. To accommodate this reluctant humanitarian role the HST was augmented by the inclusion of two members qualified paediatric and psychiatric nurses as well as specialists in both paediatrics and adolescent medicine.

Although based in the second commandment my position of medicine extended to beyond commandment and was fully supported by expert medical specialists. The range of pathology was not again the ordinary severely dehydrated, patient with a deficient intake with mal-are malabsorption of only 7.8 cm (Fig. 1) comes into clinical picture. These malabsorption, high velocity injuries caused by bullets, land mines and children playing with abandoned ordnance



Fig. 1. Severely dehydrated child. Dehydration was evident in clinical picture.

Table 1 Summary of patient activity in Srebrenik including lost and found

Survivors	64
Deceased persons	20
Prosthetic	49
Total	214
Total number of patients requiring surgery	81
Total number of operations	32

(Table 1) A major expansion for a general patients' hospital

ARRIVAL

The indirect outward journey finally ended with our arrival in Srebrenik 80 kilometres inside the northern land border. The advance party had established the forward facility on an existing building (Fig. 1). Although the roof had required several supplementary works, inspection the machine tools were considered. By the time we arrived, some five of equipment and vehicles. The working area within RNH for work included a major treatment space where

soft and severely traumatized patients with compound, infected and those injured in other incidents were in the postoperative ward.

All these facilities were staffed 24 hours a day. The hospital received patients by an advance detachment of British Hawk helicopters or by ambulances from surrounding hospitals and incoming facilities run by the US or UK armed forces and civilian aid organizations. Increasingly, birds presented themselves directly under hospital, particularly at night, as we provided the only medical facilities in the area. The ground doctors were on duty every second day and the days not dedicated to our own hospital and were spent supporting military facilities.

DEATH

Work 2 involved a significant amount of work inside the hospital. A Company of US Army medics had established a wing station at this day 5 intensive to the west of Srebrenik. Using the experience gained by our advance party in Zhitko on the long Turkey border, a receiving facility and feeding area were set up in an existing building to provide treatment, food, dispensing and make arrangements area. At



Fig. 1 On long wall of the new Northern wing

though we saw only 48–50 patients a day, there were some extremely sick children with diffuse haemorrhagic petechiae. In Table 26 out of 24 children with disseminated haemorrhagic disease, 20 were extremely haemorrhagic (21% of these were) continued being misdiagnosed using a simple protocol.

12 May 1991 brought the first of what became limited but eye-catching very distressing, severe, two children injured by a land mine. One required surgery to debride his leg; the other would probably be blind. Severe trauma was dealt with using the A&L20 approach. However, not all that we saw was the consequence of mine-related, roadside bombing and warfare within the space of 10 minutes on 12 May in Dursley. I saw a grossly malnourished 10-year-old girl with pronounced bilateral hypoplasia and a 14-year-old boy who was near to die with severe malaria—a pure malaria fever.

17 May started with the hospital's first death: a desperately ill infant with massive bronchovascular and pneumonia in her last three of the

diagnoses. We also saw our first case of cholera, just two-year-old boy who had some loose stools of rice water diarrhoea. This child was associated with an overwhelming blood parasite and elevated haemoglobin values of severe anaemia. His life was probably saved by rehydration via the intravenous route. It was a real thrill to see him walk out three days later of a little stability.

Week 2 began with a trip to Escuintla. The small town embracing all the scars of a recent civil battle in quieted this important pass (Fig. 2). It was there I was most of Postgraduate work which helped to explain the frequency of trauma-related injuries. On 21 May we treated a local who had been beaten on the ankle by a rope knot of the mine damage resulted from a mine-sweep which had been applied in error. The same day there was a tragic coffee-crochet accident: his left leg amputated below the knee, and blind in one eye. His father with his day-old fractured femur accompanied by an elderly relative who was supported by the child, ambulated in her parental role. The child left strapped up the hospital steps into a hope; we would only offer sympathy. A 74-year-old woman presented on 22 May with an unusual myoepithelial swelling thought to be a Pilon's fatty tumour. We took her to theatre and confirmed misdiagnosis of her right breast cancer—the superior aspect of her cancer was completely absent.

15 May was a relatively quiet day at least until 1800 when an American Huey V utility lands drove up loaded with armed soldiers. Seven Guatemalan children aged between eight and 14 had been playing with a land mine when it detonated. The most severely injured child arrived quickly hypovolaemic from a large laceration in his left groin. Despite aggressive resuscitation including open heart massage he died in theatre. Child number two initially had wounds looking in the dirt. At laparotomy he had multiple large and small bowel perforations, necessitating two small bowel resections, segment colectomy with end colostomy and massive fluids. His state off the table with a core temperature of only 28°C. We resuscitated and transferred him overnight and transferred him by helicopter the following day to Fusch Hospital with an obvious liver laceration (Fig. 3), but these also required a laparotomy. A very profound liver rupture that marked the entry of a sharp-pointed fragment which had passed through his diaphragm liver and into his small bowel. Children four, five and six had multiple, leg



Fig. 3. Damage caused by land mine in Santa Ana—Guatemalan child in flight.

would not have such a reaction, and was likely to lose his life. Remarkably the land lot had only a few reactions though it was important to assess his psychological status. These signs required thought as to whether he deserved priority status. A fact was to the French ICU revealed that the young boy had done well.

The following day brought another horror run. US soldiers injured by a mine. They arrived by helicopter, both breathing apparatuses but not desperately shut down. He had bilateral traumatic lower limb amputations above knee on the right and below knee on the left. He had slipped off a mine with stepped on it, becoming flung head first and landed on his head after being thrown his first in the air. His protest a few years before had recovered a shrapnel wound on the back. Immediately he lost the presence of mind to hold his collar part, shot into limbs and with a further strike through the mine field he lay. Following admission, cut down contaminated surgery and a total volume blood transfusion the first officer was withdrawn, exhausted and immediately turned to age 17. It was a tragedy when the suddenly arrived in 1940 the following morning and despite prompt prolonged pulmonary resuscitation he did not survive. The sudden onset of epilepsy may have been caused by traumatic related epileptiformity.

We had strong evidence there but on 21 May accompanied by the arrival of four US soldiers injured by a heavily trapped grenade. Their nearly total injuries were too severe. We were relieved that the US helicopters brought them injured otherwise it is in preference to stop other landing on the reason despite the tragic death of one of their comrades.

Week 3 began with what I hoped would be a steady steady reduction in severity. I was not to be given as busy. A US helicopter brought in a land lot had been in an air lift. His consciousness level was depressed and left pupil dilated in a neurological abnormality left hemiparesis depressed shall breathe. Following initial assessment he was admitted and on a fixed on dosage where heart rates were stable and all standard bloods unremarkable. He was transferred to the French hospital for elective amputation on their ICU. Despite the prompt intervention he did not do well. On 29 May two Iraqi soldiers were brought in following a grenade accident. One had lost his hand as well as four very deep wounds to his back, while his colleague had deep wounds to the feet.

They were both operated on and kept over night under armed guard for their own protection. The accompanying Iraqi doctor also stayed intensively. He would not accept any food or drink until we first used a.

29 May was quiet until the arrival of an American soldier who had been demonstrating a Remington-Anderson assault rifle when the detonator exploded. He had traumatic impaction of his left hand, severe lacerations to the right and a large chunk out of his left leg. Despite these horrible injuries he was rather remarkably stable.

On 30 May we held the structural meeting of the single Australian Platoon from Madinet Nasser, supported by the 1st doctor, the Australian team from Dergah and the Royal Army Medical Corps officer. We were given an excellent presentation by Major Mark Little RMC on mine belts and their contingents.

There were no more cases. The abuse case was looking into a mine's hot suit with a lighted watch. Fortunately the patient involved did not react thermal burns survey. This there was the first year old child who spent a pot of looking cooking of and received burns to his abdomen and legs. Perhaps the most interesting was a 15 year-old woman who had also been injured on looking at mine three months previously. She had extensive third and upper body burns with gross swelling and contracture, perhaps a very a thing that she was faced.

Week 4 began with another extended day most accompanied by a land lot, injured lower limb amputations. One lower of these injuries was by the mine struck by the frequency with which we dealt with them. In this case the land had stopped usually and from away from the legs slumped up in the patient's lower extremities by extensive necrosis of tissue.

As the hospital's reputation grew so the number of referrals for chronic disease increased with all common lymphoproliferative congenital abnormalities. We simply advised that these patients not established freedom when they finally needed their home teams.

We had the opportunity to review some of the children involved in the land mine accidents. Their little wounds were festering. One of the boys required further surgery, on a thigh wound and amputation under a sedation of both legs. He had developed the contracture over the preceding three weeks, perhaps we had taken for granted the importance of antibiotic use and a basic understanding of physiotherapy.

On 8 June a small team travelled out to Zamora to help an owner who had been badly cut by malaria and Primos, but they had become short of doctors. The water supply in the area was very poor and there were 21 000 head of cattle in the region. There had been numerous cases of typhoid and probably the first case of cholera the day we were there. We felt the hospital could become very busy!

Week 6 found us with a slightly reduced team as five of the SST had been flown home for treatment of the malarial. While on duty on 5 June, I had to turn away some cattle owners who made Kushi, one of whom had been injured during the Civil War. One had a bullet shrapnel wound in his neck. It was evident that when under attack he was being helicopter gunned he had been hit by shrapnel which had damaged his spine and rendered him paraplegic. When I came from the hospital to visit a group of hospital and worked on an open parking area in the field. The area must have exploded and severely shocked with lateral pneumonia and the owner had said I have not seen the road was was the direction of a dinner plate and down to the house. We could not sitting cattle make him comfortable with a lot of morphine.

In the early hours of 11 June the driving station saw its first live delivery a healthy 3.2 kg baby girl. Later the same day we had a minor upset event. A young Kushi boy had seen us between two four ton lorries, the driver had been unable to stop the lorry before it had had been run away by the near side from wheel. He was probably killed instantly but he was not in the driving station. He had serious injuries, numerous fractured pelvises, crushed ribs and we suspected severe abdominal conditions.

Amazingly we waited until 14 June before seeing our first live delivery. The mother is the ubiquitous relative in Guyana living in was not unusual to see whole families gathered previously upon their native mountains with us we discovered domestic arrangements when they occurred. Only one of the eight Kushi who arrived in the driving station reported injury. He had a serious poisoning wound and extensive glandularitis. The roads had also proven treacherous to Alfred

some—a Royal Marine motorcycle messenger had control of his machine in a sliding about of dust driven up by a lorry. The resulting compound fracture of his left and right exposed external fixation and excruciating pain in the UK.

Week 4 proved to be the best in theatre. Despite the frustrating nature of the work, we were all happy. There had been little opportunity to make the improvement of the driving station, and no way of escaping the heat, dust and later Malarial events could not mind external pain. I managed to secure a delivery fully conducted by one of my colleagues. Fortunately the relief, although very small, reported no complications. Kushi professionals are not immune to accidents or injury; the leading medical consultant from 40 Colonials was transferred to us having received approximately 10% burns while lighting a petrol burner. He required analgesia and drainage before a central line was placed.

END PAGES

I was likely to be called forward for an early flight home on 18 June, although the commander of the team followed soon after. The impact and necessity of the experience decreased from week to week as responsibility and. Never for this, it is clear that we were exposed to a range of clinical experiences that would take months of our years to simulate in the Princess Health Service, and the successful team approach made for an adult learning environment. One's thoughts now dwell on those brave men and women people we have left behind in particular those who put themselves and their patients at risk to assist in its completion.

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Advanced Trauma Life Support aboard RFA Argus

G. L. Greenleafe and R. H. Taylor

Summary

The Advanced Trauma Life Support (ATLS) system was adopted for casualty treatment and resuscitation. ATLS guarantees that all patients who arrive are given the same treatment as the appropriate level possible. It is a very important. The training given on board was dependent on locally prepared material. On RFA Argus staff in shore personnel roles.

INTRODUCTION

When it was on Argus sailed for the Gulf states, it was the first hospital ship deployed for the anticipated task. It was agreed that standard operating procedures (SOPs) would be developed using a consensus approach. It was to be based on the majority of points in and providing a rapid framework to ensure uniformity of treatment. This was felt to be vital because the procedures of patients being admitted under a particular medical unit, which would be used in their chief's particular circumstances would be appropriate in response. When a patient left Argus had passed the medical examination system, no matter in a hospital in the UK, we wanted to be confident that the standards had been done and that nothing important had been missed in terms of diagnosis as well as treatment.

One of the reasons had joined the ATLS

Providers course earlier in the year and underwent prior education for the system. The medical heads of departments were receptive to the process and decided that ATLS should be taught to all doctors, nurses and medical branch staff likely to be involved in casualty reception. This resulted in almost all of the Argus medical complement being trained.

ATLS—THE CONCEPT

The components of ATLS are similar to systems involved in trauma care. The key point is the combination of these components to provide a logical, efficient and complete approach. Maintaining the risk of missed important diagnosis and credible deaths. ATLS was developed by the American College of Surgeons¹ in about 1970, making slight changes to give emergency hospitals in the rapid management of serious trauma cases. ATLS assumes that resuscitation, assessment and other operations would not be available in the setting of power having to be transferred to a large hospital or centre then help. The result is that ATLS is aimed at non-specialists working with limited levels of equipment in a situation under stress in their on board ships.

Argus's medical complement contained a mix of skills and experience from various in port and previous in hospital environments. The main requirement was that the complement was equally mixed. A further difficulty was that the team had been assembled in very short notice with the result that it had not been possible to provide any specially targeted medical training before the ship's departure. It was hoped that ATLS would give everybody a common background and avoid confusion, sharing the best of

Supplies, Lieutenant Commander Greenleafe, has left the Navy on the Temporary List and is now Director of Assessment at the Sir Humphrey Davy Department of Assessment, Royal Naval School, HMS Dryad. He was responsible for ATLS training on RFA Argus between Commander Taylor is Professor of Naval Medicine at RMA Hobart and was Head of Training and Staff on RFA Argus.

while he was returned later. A hard ground support facility would have to check capacity with which it should deliver caused by multi-quench network and connected parties arriving at the operating theatre. They would lose their places at the operating position with this results.

In addition there might not be enough device time to allow the return of patients to the operating table for the treatment of injuries that have been overlooked. ATLS would help to clarify that all serious injuries were identified and documented. This in turn would help ensure that the patient was assigned to the correct injury category, based on a thorough assessment of his condition. Above all, patient protection for emergency surgery would be guaranteed, allowing allocation of resources with the management of delay and the general chance of survival.

ATLS falls into three phases. The Primary Survey starts at the patient arrives at the emergency table.

Airway with cervical spine control

Respiration

Circulation

Disability (head to neurological assessment)

Exposure

At this stage, problems we deal with as they are recognized—that is, life points in emergency surgery that cannot wait until surgery commences. The first stage is to complete the primary survey should leave the patient with a clear potential serious sustained serious issue: adequate ventilation (ie, IPPV if necessary) with a high inspired concentration of oxygen and control of significant external bleeding. Intravenous access will have been secured with a minimum of two large-bore cannulae. Blood samples will have been taken for appropriate tests and blood cross-matched. The patient's neurological state will have been assessed and he will be, completely and/or partially paralyzed for intubation and the passing of a nasogastric tube. Any immediate threat to life should have been removed or at least identified by this stage. A suitable history will have been obtained.

The Secondary Survey consists a coordinated team commitment, starting the work towards restoring our T1, T2, T3 and T4, then proceeding to perform all necessary tests and the following. Finally the patient is reported and initial differences performed. Results taken immediately during this survey and the point of reference a high standard of care.

of surgery throughout. The Glasgow Coma Scale and vital signs are recorded. On completion of these first two phases the patient's immediate needs will have been met. Radiographs (formed in considerable numbers) open chest and pelvic examinations will have been taken where indicated.

The team leader will give a comprehensive overview of the status of the patient's injuries, degree of physiological deterioration and response to initial therapy. A comprehensive history will have been obtained by this stage including enough details about the patient's past history to allow an assessment of his physiological reserve before being injured. At the end of the secondary survey, enough data should have been provided to allow accurate triage decisions to be made.

The Definitive Care phase encompasses everything from the application of flaking plaster to laparotomy and vascular repair. Long-term planning is included here, perhaps applying the patient's experience in a centre whose services match his documented injuries. In preparing definitive care may include the immediate transfer of the stabilized patient to a specialist hospital or a neurosurgical centre. A key feature of the definitive phase is that decisions are based on comprehensive information produced during the preceding phases. Expenses should not come to light as a result of patients' differences in the ward.

ATLS TRAINING AT SEA

Some modifications were made to the course. For example, a junior lieutenant (midshipman) on board who was able to perform abdominal examination examinations. The first two services rendered diagnostic personnel (large numbers) individualized his team in addition to dealing with the presence of the head in the posterior space. He could determine which organ had been damaged and assess the response, after damage. In addition, the presence of conditions in conditions, orthopedics and general surgery assessed the requirement for a depth training in these areas. Unlike the doctor at the American community hospital, our emergency room doctors had never felt manually as hard.

Each lieutenant, while was enabled by our doctor and their assessment who could be referred to the medical branch, damage. Training was given—trained with each team applying the ATLS system. Under the leadership of the senior, in many cases as possible, staff (they were able to perform independently under their own

ness and efficient prioritizing. The ship's clean-up control room was equipped specifically to handle difficult handling scenarios. Keyed alarms, voice-activated elevators and the hospital where the A&G team commenced their primary surveys. Swabs and objects appeared on each instrument equipment and other materials were provided for each ship. Numerous sets of instrument materials were stored from the ship's stores. These lasted only a few minutes until the patient arrived on a transport table. Two teams made short work of the patient: "what A. B. and C" was attended to by the doctor and the remaining team (D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z) handled the primary and secondary surveys with their associated interventions. More being completed on 23 patients.

Training took place during the days two week course in the Unit. Both crew members and residents during the voyage the training sessions allowed more realistic scenarios to be presented for each specialty's first and best patient care teams, strengths and weaknesses. This allowed us to take the training component where necessary to provide a more uniform standard of care. When topics arose in relation to November the collaborative for casualty reception was in place with the necessary medical and nursing teams ready to receive patients. These days followed a fast pace of the war started. When training not only increased the numbers of staff trained in A&G skills providing a greater potential for flexibility in manpower deployment, but probably helped to reduce the fatalities inevitably associated with such a period of war. The training continued into the war itself, to keep skills sharp ready for the day when they might be needed.

A&G IN PRACTICE

An American sailor was transferred to A&G from the ship after a month's cruise. Several other less severely injured patients accompanied him. The paramedic quickly stated: reported that the man had lost a great deal of blood on the upper deck and had been unconscious for over 15 minutes. He had been drilled to a limited flow of blood from the chest's upper vessels. Within 30 minutes of the patient's arrival the severity of both respiratory distress and the extent of damage of one patient had been recorded. Appropriate resuscitation had commenced as patients for Glasgow Coma Scale to normal and his injuries had been recorded after about an hour. Two hours after his arrival he was tucked up in bed. His head injury had

been assessed and wounds treated by a medical team, support. He had had been assessed and his management undertaken by a civilian medical officer, medical support and his current status, three and six months and injury had been assessed as being caused by a possible malpractice. He made a steady progress and was transferred to a US Navy hospital ship where no further injuries were discovered. A&G had attended his injuries, arranged prompt resuscitation and allowed prompt referral to the appropriate specialist.



A & G. A&G team on board. Upper chest training.

A&G AFTER A&G

Knowledge and skills tend to decay without adequate reinforcement. Nevertheless, it has been proven that the most effective way of preparing for Operations is to conduct a series of drills. Such training to assist in the medical and emergency departments have been using A&G skills into their training programs. "Secondary survey and logroll" and the A&G team inspection continued to appear in

carefully written, giving some indication that the components of ATLS are useful tools that continue to be used with enthusiasm. To paraphrase W. H. Auden, many good ideas are tragically forgotten, but few bad ones are entirely unremembered.

After ATLS is the name given to courses organized under the auspices of the American College of

Surgeons and the Royal College of Surgeons of England. The courses provided in turn the original components of ATLS but were not ATLS courses per se.

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An insight into the life of Royal Naval surgeons during the Napoleonic War. Part 2

J. C. Goddard

THE NAGGING OF THE UNDERBOSS

In the first part of this paper, published in the Winter 1991 issue of the *Journal*, I told the naval surgeons during the Napoleonic War and the state of health of the ships they worked on were deplorable. The surgeons on board ships were sent deliberately to the battle of the coast and received a huge toll for the surgeons to treat thousands of more wounds for the war-torn areas that more diseases were brought on board to give those treated by the surgeons already existing. The sick berth and cockpit were, therefore, getting there who were brought there was even more seriously sick. When the surgeons themselves were badly paid and found themselves in a difficult position in life. Often regarded as being towards the most power of officers, the ships' surgeons hardly found himself in the position of a gentleman of medicine and surgery.

This rather poor state of affairs obviously could not be suffered to remain unchanged for very long. The surgeons had had arranged themselves during the lives of their former commanders included in glorious battles found themselves looking at cockpit burning with little variation regarding in the state of a tropical fever. The captains of the ships saw their crews debilitated and motivated by disease, and the surgeons found themselves looking at being badly injured but hardly. All could be done things was required and all had to change.

The naval surgeons in other concerned as the increased rough weather who probably did more harm than good. would certainly for the surgeons they found on the ships and in various ways tried to alter them. They could make their complaints known by writing to the Navy Board or to the Admiralty or by denouncing the underbosses in the Board's which at least would be used by the Commissioners for the Fleet and Port Board and by the Company of Surgeons.

Finding that their cockpit and sick berth were woefully inadequate, the surgeons petitioned their captains for change. More rooms and better positioning was required so that the vessels might survive as in battle as well as was possible to find on board.

From Pargue's version of 1745 (Pargue presents a good example of the determination to provide a suitable environment for his patients) finding the situation as his captain most reasonable, he proposed the captain's wife paid a visit.

I applied to Captain Ashmole and got the sick berth (which before was small, confined and uncomfortable) much enlarged. It is situated under the Forecastle on the starboard side of the Gallery and includes the forward funnel and one of the lower decks which is now covered round like a theatre set up for the admission of air.

Unfortunately Pargue's changed ships a month later. He found the crew of his new ship HMS *Cygnet* suffered with wounds and ill

Mr Goddard is a medical student at the London Hospital.

on board the *Thetis* depicts the very crude cases which would lead to severe rheumatism and pulmonary complications.

We sailed from Rochester on the 15th March and arrived at Lisbon on the 17th. During the passage we, very, very often took the lower deck parts and from there being very badly dried the lower Deck was constantly wet and splintered. It is a great pity that such cases was at not good conditions prior to this voyage.

Frequently there was too many of men placed in the patients suggesting that a few ships certainly be very much increased to carry off the water that fell on the Deck which would undoubtedly contribute very much to the constant and health of the sailors.

That the decks should be dry and dry in all cases was something that every surgeon started then suggested. Whenever possible gun ports were up and deck hatches taken out on deck to get the decks wetted wherever the weather was suitable for drying them thoroughly. For damp was considered as evil equal to dirt. Nurses were so frequently advised to keep wiping the decks wet so that they knew where they had become wet in fact wetter. If it was not possible to wash the decks they were scrubbed with Mocha of wood and sand to clean them.

A very ragged of cleanliness and health was carried out on HMS *Zebray* as described by Surgeon John Fraser¹.

As soon as it was taken out he was immediately exposed to the sun being under the sunburned deck. He was dirty and up with a clear fire and combined with water and sometimes soap. The ship every day after working the decks are kept all over with small fire and every morning before eight o'clock the hammocks were put on deck and a whole lot of water would pour a quarter of the hammocks were opened and spread on the stowage and on the benches, so as to keep them up, for the stowage only to keep them up, while all the things completely fresh they had well aired and dried. The pieces were, placed in a separate place detached from the other deck, a deck laid up under the hull deck for this purpose.

All of these improvements which have been noted by the surgeon have depended upon the competence of the captain of the ship. It was strictly his duty as to when the deck, berth

should be placed and how long it should be. Also the daily record of the ship, the washing of decks and lighting of stoves depended on the captain. However, he also noted the health of the ship to improve. For despite the observational findings reason for waiting to see his own health and in an unhealthy ship being a small confined community would also endanger the lives of the officers as well as those of the crew. On a many official line, the most strict who were on the deck, the best men who could stand in their duties. An unhealthy ship was therefore an unpleasant and weaker ship to handle. The captain generally followed the advice of these surgeons and attempted to keep their ships dry clean and healthy. They provided the best techniques they could come to the task would recover quickly. The surgeons generally used the findings and suggested some of the rules in and officers in their journals, for instance, Surgeon James James of the *Thetis* writes of 'The cleanliness and stowage shown by Captain Goldard to the ship on board and said that the officers of the gunboat were no less ignorant.

However not all surgeons were fortunate enough to have such a favourable opinion. Surgeon John Hanson of HMS *Zebray* comments 'a week's days of them being in water is impossible conclusion but we could help by a commander who informed him he would have to look on his ship. However, it appears that Hanson had got off to a rather bad start when he presented his written to the commander who immediately informed Hanson that he was himself a surgeon and had been to war four years, or three voyages that no surgeon was allowed and that he would come.

Nevertheless Hanson was on board, but when he requested leave, a being healthy and the ship extremely damp and only his request was repeatedly denied. His resignation of leave was allowed to the crew and Hanson complained that men with bad ulcers were made to work. Finally when a Boy, Francis Kitchin aged 16, died of his illness. A suggestion was made to the Officer Commanding for a team to take the Boy to Hatter Hospital and he promised to leave one and morning between 8 and 9 but as the patient was not ready properly at 8, it was left away though they were 12 hours on the ship. He was nearly 12 months past it and was very well almost as the crew up. Hanson complained to the Board that the behaviour of the Officer Commanding was very contrary to the laws of humanity and

very different from the ship he had previously served in.

Fortunately the intensity of exposure is open to-far-few limits a (and) not more helpful although in 1955 Surgeon Dennis Gray, who was taking up to meet aspects with the discovery is nearly completed¹² that the only condition which could have affected reliability which were no previous to be treated as a contemporary witness who had nothing to give us except his first and fervent¹³

The surgeons not only attempted to improve naval health by improving conditions they also tried to improve their treatment. Gray's efforts were put in by using myopia to carefully study and describe details and had the most favorable treatment for them. Some of the journals contain their opinions on particular details which were submitted for the Board's and Company's approval. Details of proposed discoveries and successful treatments were then transmitted to other surgeons on the fleet leading to many improvements in various details of treatment.

One major obstacle within naval surgery at this time, which was compounded by the many of the surgeons, improved the timing of operations of some of these conditions is should the surgeon amputate immediately or should he postpone his operation until after the battle having applied a tourniquet? The main factor in this decision was that of shock by waiting too long the surgeon might endanger the patient by allowing him to become hypotensive, especially on the other hand, rather than operating during a gap battle when the surgeon was being disturbed by enemy machine and the arrival of further casualties; it might be desirable to postpone the operation until such time as the surgeon could concentrate more on the procedure. In 'The Naval Surgeon' by John Adams a textbook used by some of the surgeons at this time, the author recommends a severely amputee: 'the first and simplest of which should be the preferred time for amputation, one working their machine with greater strength and steadiness than when they first open a night under thought and reflection'. Likewise in his observations on the Proper Period for Amputating in Naval War Wounds the author Nathaniel Clifford Hinchman stated that a markedly higher percentage of recovery occurred if the amputation was carried out immediately and that when the operation was postponed until after the injuries the patient frequently succumbed through loss of blood. Thus the operation

could not be delayed and MORTIMER¹⁴

The naval surgeons themselves were, through experience, among that never wounding did not always lead to excessive hemorrhage. Robert Young's testimony that in his account of the battle of Camperdown (see Part I of this paper) and in 1955 Matthew Wilson of HMS *Proteus*¹⁵ comments on a Private of Marines whose arm was blown off by cannon shot.

From the time he received the wound until he came onto the Deckplate it was 10 minutes and what I cannot exactly account for is an severe bleeding a drop during that time.

Wilson also stated the day with which they were engaged and which was later captured the French man-of-war (a *Guillemet* 700) he observed that several who lost their legs and arms receive a small portion of the skin by which they were suspended remained at that state without even the application of a Tourniquet for the space of from 4 to 18 hours, without a hemorrhage of the least consequence taking place. One of whom I saw two days afterwards doing well. Wilson concludes, 'This must be a great encouragement to surgeons to delay, sometimes during the time of action in order to have daylight.

During this period of losses and bloody battles the surgeons was faced with many difficult and novel surgical cases. From this experience the surgeons learned much about their art, and some then proceeded to challenge the traditional limits. Surgeon McCulloch of HMS *Proteus*¹⁶ in treating a shipwreck which had deviated the hospital crew, decided to try and restore the vessel rather than amputate the arm as recommended in the text books. He is almost unique in his description¹⁷ of this brave and successful surgery.

I hope it will not be taken as an error in my judgement in the art of surgery but not immediately amputating this member finding the femoral artery wounded. But having had an opportunity of seeing a case nearly similar (though my attendance in the London Hospital as a pupil of Mr B. I attended with success it was being intended for me to attempt a trial in this case. McCulloch then wrote for the patient survived.

The two most notable consequences which naval surgeons have made in regard to amputations have been recorded in the cutting down of amputees instead of leaving them lying out of the vessel, which was first performed

following an operation by Laurens Harcourt, Surgeon to Royal Hospital in 1786 and the demonstration that the common cord stitch could be successfully ligated without the support of David Fleming of HMS *Tiger* in 1807.²²

Another debate which raged on over the years (which took up almost half the writing of *Quilled* was: Originally intended to keep the sailors well, the practice was discovered by some, for instance Surgeon Alexander Wilson of *Albion* who thought sailors could be done in dressing with bands.²³ However, the practice soon went sailors were their fastest route while working in hot weather. As they had to be dressed in this way, and the bloodied field medicine store to be shut, the practice was defined as proper. It is said that disagreements on this matter led to the falling out of Lord St Vincent who supported the idea and Thomas Trotter who thought for sailors' sake and good discipline.

The naval surgeons also introduced some preventative measures into their medicine. Many attempted to keep the crew well fed with a balanced diet, providing fresh vegetables whenever possible. It was recognised that this practice would prevent the scurvy although it already existed on many used boats and it was as common on land as preventative medicine.²⁴

Surgeons were still a distance from what there is a devastating effect many of the surgeons then tried to persuade the ship's commanders to be recognised as the common Surgeon Thomas Thorne of HMS *Albion*²⁵ succeeded in persuading seven of the crew to undergo the procedure which was believed in the usual could was. However, although Surgeon Purcell of HMS *Capitaine* and the *Albion* and a key player for operations, all the other surgeons and the crew who had not had the procedure refused to undergo it, according to *Quilled*.²⁶

A further prophetic practice was known to the crews of both *Albion* and *Albion* before they were taken to the West Indies. This procedure was to prevent them catching what was said to be the disease which was a common problem for those exposed to cold wind over a warming station. Surgeon Purcell told of sailors who passed their time in a cottage in Spanish Bay in order to guard the water from where every man who spent the night there was attacked by fever. This practice of using Cinchona bark was found to be successful on the West Indies, then in 1801.

Nelson recorded the practice in the *Medal* in 1801.²⁷

Despite the observation that the continuation of some vessels actually prevented further change. Looking up death was still one of the main causes of business during action for it was not always possible to pump a wounded man successfully to the deck and consequently during the war the longward in the combat area to avoid being from his wound. The common daily emphasis was to pump and defend that at the moment would not be brought to them any faster it was necessary to stop their hands being beforehand. Under these conditions the means of stopping bleeding was to apply a tourniquet to the wounded limb and in 1807, there had a discovery that the use of this red string that no one should serve a wound or pain officer should be done but to apply a tourniquet and should carry some in the back during action. In 1806, it is said that the *Albion* Surgeon, Thorne had reported the idea, suggesting that the whole crew should be taught the technique in the days of John Kaye's 1807, the water was that he would pass through the deck going instructions to the use of the tourniquet to stop haemorrhage. This is explained in the common means and techniques the art of stopping a falling wound the bleeding limb of a wounded crew.²⁸

It is not known to what extent this practice was adopted by the naval surgeons but when Nelson was wounded in the chest during the battle on Trafalgar in 1805, he would have had to die before he reached the surgeon who attended him and had Joseph Mordaunt, his chaplain not quickly applied a tourniquet.²⁹

It was not just the surgeons that the ship's commanders were more powerful than the Lord St Vincent who himself tried to advocate others to improve the health of his crew that struggled and consequently to better the conditions on board the *Albion*, captured a crew of 150 ships, the men who made themselves bound to the crew of 1797 were saved by the poor conditions, came to a head and systems achieved throughout the fleet. The measures continued to do. Admittedly about their poor health, conditions and the conditions were of the sick. It should be noted that their governments were such that if they and reduced would lead to the improvement of naval health. A petition given on board the *Queen Charlotte* on 18 April 1790 by the Delegates of the Fleet, contained the following:

"Thirdly, that your Lordships will be pleased seriously to look into the state of the sick on board HM Ships, that they may be better attended to, and that they may have the use of such necessaries as are allowed for them on shore of sickness, and that there may be no loss on any account whatsoever."

It is therefore evident that the Admiralty and the Navy Board, and in some cases the Comptrols of Supplies, were in receipt of a constant stream of complaints and recommended changes to the state of His Majesty's Ships with regard to health. Administrators were made by the ships captains and men of great influence, such as in 1764 a sick up the use of naval hospitals and set an example by attempting to improve conditions while the men, themselves, prepared in a manner which must have doubt the Admiralty to its very foundations. It was however the surgeons who with first hand experience forwarded the most serious complaints and many medical and practical suggestions. In the constant stream of journals which poured into the Navy Board, the captains continuously pointed a picture of poor conditions, inadequate supplies, inefficient personnel and shipboard men. More instruments and observations on how to change surgical procedures were entered into the journals in the hope that they might influence the Board or Comptrols to make the improvements. The voice of the surgeons, however, was not a loud one. Although their journals were regularly being submitted, they may not have influenced anyone. They may not even have been read but the record was there and a just model continued to take notice and act and until this happened, the surgeons could not force their changes either as they were able.

THE SEAL OF THE ADMIRALTY

The prevailing action has shown the way in which the various groups within the Navy at the time under review recognized the problems which led to the continuously poor health of those at sea. It has shown how the surgeons in an attempt to better their patients, depicted the problems in their journals and in some cases suggested reforms that the Navy Board do nothing about it? The answer was not a good deal.

At the beginning of the period under review the surgeons, and indeed the rest of the navy were organized in their duties according to the Naval Regulations of 1711. These laid a regular

times and instructions relating to Surgeon offices had been introduced because the Orders and Regulations which have from time to time been issued have been so important and through length of time become so ingrained that the Officers of HM Ships have been likely to fall into tradition and Obsolete in the Customs of these Days."

These new regulations included a section entitled Rules for the Care of Sick or Hurt Seamen on board their own Ships, which were basically as follows:

1. That convenient room shall be made between decks, as all HM ships for the reception of all sick and hurt seamen, whether they are to be removed with their hammocks and bedding when the day goes shall advise the same to be necessary.
2. The Captain is to appoint some of the Ships Company to attend and nurse the sick night and day by turns and to keep the room clean.
3. All Ships of War furnished with sailing tackle being at sea, some whose hull is so built, the Captain is to employ some of the Company in duty, that the sick may be able to cough their to be distributed daily in such portions as are need.

A later version of these rules, Instructions for Surgeons' is devoted to the conduct of those holding that position:

1. When a Surgeon is warranted to serve on any of His Majesty's ships to provide himself with instruments, and a chest of ready money and prevent the same to be viewed by the Physician or the Comptrols of Sick and Wounded or if there is none by the Physician or Comptrols (Hospital) in consultation with the Surgeons Company. When the money is over, the chest is to be locked and the keys of the Physician and the Surgeons Company to be utilized therein in such manner as to prevent its being afterwards opened before it shall be found that the Captain is about any other into the ship without their mutual assent.
2. Surgeons are to bring on board sufficient numbers of smart Patients, to be obtained from the office of the Clerk of the Ship.
3. Surgeons are to examine the Necropsies sent on board for the use of the Navy Men, and if they are not good or not sent to

suggested the Captain, that he was representative that matter to the Fleet Board. He is to keep the said Medicines in his custody and not administer or dispense any part thereof, but take care that they are well bottled and duly served out for the relief of the Sick Men.

- 6 A Surgeon is to visit the sick twice a day and prescribe a Sick List to the Captain daily.
- 7 When a man is sent to the Hospital the Surgeon is to send with him an account of his disease and the method taken to treat it.
- 8 In no engagement he is to keep himself in the field where a platform is to be prepared for the reception of wounded men, and himself and his mates and assistants are to be ready and have every thing in hand for stopping their blood and dressing their wounds.
- 9 He is to keep a diary book from which his journals are to be composed: the one of his Physical Powers in Action, the other of his Chemical Operations and, at the end of the voyage, to deliver the first to the Physician of the Commissioners of the Dock and the second of them to some of the Physicians of Greenwich Hospital and the latter the Director of the Surgeons Company, who are to examine the same and certify their judgments thereon.

Medical tests and improvements in these rules were sought throughout the period. Eventually a few of the suggestions were found but were only implemented after passage from influential people.

In 1790 Thomas Thompson's "Review of the Medical Department of the British Navy with a Method of Reform Proposed to the then First Lord of the Admiralty the Earl of Chatham in the Treaty proposed among other things, that projected naval surgeons should not be continued by the Surgeons Company but by their serving governments. He also opposed the doctrine that surgeons had to prescribe their own medicines and called for the reduction in the fees imposed for medical disease."

Thompson's complaints and proposals fell on deaf ears as did those of Gilbert Black when he was writing as private physician to Admiral Sir George Boscawen (1791). It was only when Black was made a Commissioner on the Dock and Navy Board in 1795 that he could put his proposals into practice. These served well

Boscawen on HMS *Swallow* as the Surge of Calcutta in 1777 and because of his successful suggestions were agreed on behalf of the new order. Boscawen's continued list was made. Physicians of the Fleet, by now he had first hand knowledge of the conditions under which the surgeons sailed up, maintain the health of the sailors and therefore could present the kind of reforms which were being asked for by the surgeons themselves.

In 1796 the Navy Board considered the first useful action with regard to sailors' relief by implementing the provisions for the Government of some of the ship's medicines. This improvement was noted in some of the *Journal* for Surgeon Horner of the *Temeraire* was first to write that the ship's provisions medicine chest was reported to have arrived at Portsmouth. The account of Black also proved for the surgeons a pay estimate of £1,000 per month and improved the prospects of a pension.

It has already been mentioned in part 1 of this paper, it was due to him that a union just was officially agreed on all ships for the protection and care of sailors.¹¹ However, like many of the regulations introduced to improve the health of the navy that had already been prompted by the surgeons themselves and the Admiralty's and Navy Board's action was merely a rubber stamp.

The implementation of the rule, both themselves was officially accepted by Admiral Lord St. Vincent, who ordered that an improved dress whereby the sick berth was produced beneath the forecabin should be implemented for all the ships of the Channel Fleet, of which he had just become Commander. Once again the decision came a little late. By 1800, the lower layer and most badly sick berth was already being introduced into the Fleet by the ship's captain at the advice of the surgeons. However, St. Vincent's advice up should did a ship, don't forget, carrying 1,000 men, 100 sick men on board. Other measures which had been on the throughout the period under review were gradually directed into naval replacement. By 1808, for instance, the instructions that surgeons' book should be provided for them on shore duty on the West India Station had been an improvement. The practice had of course been carried out by the surgeons for some years and had also been extended to the Mediterranean.

It was however in 1805 that a major improvement in the lives of the naval surgeons occurred. They were finally recognized by the

increased pay and improved status. From before 1840, all naval surgeons were to be dignified for half-pay during the time they were not actually on board ship. The whole pay system was revised and improved in order to make the job of naval surgeons more lucrative and hence more desirable. Surgeons on active service were now to be paid 11 shillings (£1) a day (£16 50s monthly) or 11 shillings (£1) a day if they worked in one of the naval hospitals. Surgeons who worked on the shore for 30 years received a discount of pay to 14 shillings (£1 10s) a day and after 30 years' service they could retire on a pension equal to half-pay. The Surgeon's blue was now to be known as Assistant Surgeon, due to being seen in a general sense to improve their status and was to be paid 8 shillings and 6 pence a day. They had also to be fully qualified in the naval hospitals, the post of Visiting Assistant Surgeon, Surgeon and Assistant Surgeon were to be distinguished and a standard Hospital blue. A remarkable change was relative to the change of title for Assistant Surgeon when they the two departments showed three shillings to be added together on the same pay of 4 shillings and 6 pence a day. At the same time the Department of the hospitals had their pay increased to 10 shillings a day.

Physicians of the Fleet and the Hospitals were also included in the 1840 review. From that time on, no one was to be appointed a Physician of the Fleet or of a Hospital unless he had previously served as a naval surgeon for at least two years. The pay of a naval physician was to be one guinea a day. This was to be increased to two guineas a half-a-day after three years and to two guineas a day after ten years, when the physician would also be provided with free residence.

The new regulations also allowed for the ship's doctor to be free of charge to the surgeon, although he was still obliged to furnish his own instruments. However, one of the most important changes introduced at these new meetings was that the naval surgeon was given a uniform. This was the first time that the naval surgeon had been recognised as his own by the Admiralty, although their records indicate that before that date some surgeons had been wearing unofficial uniforms of their own design. A portrait of Tobias Smollett painted around 1750 depicts him in a uniform, trimmed with gold-laced buttons and Thomas Trower, when Physician of the Fleet, wore something similar.¹² The surgeon's uniform soon came to be a blue cloth coat, with blue cloth lapels

waist and collar, the collar was to stand up. It was to be worn with a white cloth waistcoat and breeches and a plain hat. The surgeon was never to be employed on duty on officers' vessels.¹³ The new uniform combined the ship's surgeon with a lighter status.

The new regulations also gave the senior surgeon the same standing as the senior surgeon who ranked as captain, however the naval surgeons were still considered subordinate to the ship's Lieutenant.

The position of naval surgeon, although still not purely dependent on his rank might have offered a decent living. Perhaps more importantly, the Admiralty had finally recognised the problems and had taken measures to improve the situation in the hope of producing more young medical gentlemen to go on to, and serve their country in a war which was to last another ten years.

CONCLUSION

How shall I venture to tell you of the melancholy state into which the public service has now fallen? It was never respectable, it is now deplorable. When a young man enters the Navy, his education first of books and secondly of service, he is put down into a hole, there is nothing for years, he is deprived of all communication of all ideas for knowledge. To breathe the word for, he must live in the promiscuous conversation of the wardroom. Future history associates with everything is forced there but what remains from them, his possession? His youthful ambition to deal his profession as literature has first proved failures, which coming up with the first dawning of knowledge are forced there his mind is vacant and powerless, and all his previous lessons are running down his nose.

This was the state of naval life which met the eyes of John Barrow in 1807,¹⁴ and to a great extent, the development of the post conditions for the naval surgeon was really true. However, the position of the naval surgeon as a man of few letters and virtually self-sufficient in a life of isolation and apathy, is a false stereotype. Contemporary descriptions are not alone in depicting the position of the naval surgeon at this time, the literary books about doctors have as numerous broad and successful in his work, he is frequently described as a rough sea horse.

It is not proposed to claim that any one

success of this period made lay claim to the title of a medical Colossus and it is surprising that some truly great men's descriptions however it is acknowledged that many of these men, despite adverse and difficult conditions laboured hard and with some skill to carry out their duties. Some of these naval surgeons made great efforts to improve the conditions on board the warships and thus the health of the crews. They distinguished themselves (often by ignoring and disregarding on board and were privatised as well as further assistance to improve naval health.

The label of non-issues was probably partly derived from the large numbers of amputations they were called upon to perform. However extracts from Journals and medical correspondence show that the surgeons were making efforts to prevent the greatest possible surgical risks. Throughout this period a healthy diet (often a blend from compressions) was used and some diets were being issued but some of these were being more experimental methods. It will have been noted that Surgeon James Young of the *Comet* performed delicate surgery and drawing on a patient's hand where amputations might have been expected and that Surgeon McGrath¹² is dividing to begin the femoral artery following a subcutaneous tunnel as one of his amputations. The surgeons have also been seen as participating in the study of the anatomy and treatment of disease but it should be remembered the surgeons were not officially trained in this, being the realm of the physicians.

In the introduction to his *Autobiography* (1980) Surgeon McGrath¹³ sums up what he believes to be his duty as a naval surgeon:

Nonetheless Goodness: Health being the greatest power in the Order of Life it should be not a principal object on board ships of 'first to try and preserve it as well as of the fitting of life is permitted into duty.

Towards the end of the period under review the efforts of the naval surgeons to revolutionise lay being considered with little effect as a small number remained. Long deserved as credit to pay with interest and the surgeons were treated with a uniform and permitted to wear a sword. This suggesting that some look on the navy and its worthy deeds of these reforms were brought about through the efforts of Captain (Paine) and it is therefore he and that was the great from the words of the breast

deck, rather than the work of the Admiralty. It should also be remembered that although long suffering the medical department of the navy were criticised they did not ignore the task of the naval surgeon in two past eras, and it is doubtful that the Admiralty ignored many of the better class of medical gentlemen which they desired.

Finally on the health of the navy was particularly in the surgeon it should be noted that the mortality rate on the ships of the Royal Navy in 1780 was 1 in 8 by 1810 this had improved to 1 in 50.

The following verse by Thomas Dimsy himself a naval surgeon, depicts the work of his profession:

The work man's hand answered in useful war

Because you cheerful of yourself a mind
Fixed on his purpose reaches yet that
Memento in minutes, time with ready skill
That, reaching us in our own hands we all
See us for matter has risen on water only
And against a point cut on both sides
Memento and under follow on his team
Against his back and smooth the coach of pain
Which danger clears the time and makes
hand
He makes again with generous hand
And happy thought points forward painful point
The finished hand that makes a soldier's
wound¹⁴

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4047TH Although the Dean of Jesus College has been chosen not to be original and use phrases in referring to Thomas Aquinas's statement in the *Soliloquy* that "the soul is not a body," which appears in the *Summa*, I find it hard to find that the Dean is ethically correct, and that is not the Dean's business. I am sure that the Dean is a very nice and capable person, ethically, in this case.

Alan Hirst Memorial Prize

It is pleased to propose a General Practice Prize in memory of Captain Commander Alan Hirst who died in July 1991. The prize will be awarded to the Royal Naval General Practitioner who shows the greatest excellence in General Practice over the preceding year.

Details are still being planned for Alan's estate. John has agreed to present the first prize at the Royal GPs annual dinner in June of this year. Several GPs have already contributed in a prize fund. It is hoped that there will be sufficient interest from the fund to award an annual prize. The Editor feels that there may be other Royal Medical Officers who would wish to contribute to the proposed fund.

Anyone making a submission should send a cheque to:

The Journal of the Royal Naval Medical Service
(Alan Hirst Memorial Prize)
Merrilyn Hirst
Secretary of Naval Medicine
Arlington
Coventry
State PO13 114

Any nominations for the first prize with a suitable explanation and should be sent to:

The Admiralty or General Practice
EN50J
Room 06/400
Plymouth
Devon PL1 2NG

Abstract—paper by a Royal Naval Medical Officer

Cook HT, Sullivan R. Glomerular nitric oxide synthesis in *in vitro* Immune Complex Glomerulonephritis. *in* *the* *vol. Am J Pathol* 119:1 (1992) 1045-1052.

Ureae (NO) is the major end product of nitric oxide (NO) production in cell culture. The authors have examined nitric oxide production by glomeruli from an immune complex glomerulonephritis in the rat. Glomerulonephritis was induced by isolated renal perfusion of saline and human gamma G immunoglobulin (IgG) in pre-sterilized rats. NO₂⁻ was measured in culture supernatants of isolated glomeruli after 48 hours. NO₂⁻ was produced by isolated glomeruli with a maximum 4 days after induction of glomerulonephritis (21.4±11.4 pmol glomerulus⁻¹ hour⁻¹). Production was inhibited by hydrocortisone (10⁻⁶ M, 1 µg/dish) (5.4±4.9 pmol glomerulus⁻¹ hour⁻¹, *p*<0.001). NO₂⁻ production was inhibited by the nitric oxide synthase inhibitor N^G-monomethyl-L-arginine demonstrating synthesis through NO. Dexamethasone (10⁻⁶ M) (molally reduced LPS stimulated production by peritoneal macrophages and nephritic glomeruli (*p*<0.01). No synthesis related from nephritic glomeruli produced NO₂⁻ (4.9±3.4 pmol/10⁶ cells). The production of NO by nephritic glomeruli has implications for mechanisms of glomerular injury and glomerular haemostasis. The effect of dexamethasone may represent in part the suppressive effect of steroids in glomerulonephritis.

Acad. Surgeon, Sub Lieutenant Richard Sullivan is a medical student at St Mary's Hospital Medical School.

Book Reviews

Meaningful Adult and Agingness. Ed G. Mulvey. Pp 191. British Medical Journal Sep 1991. U.K. £5.95. Dimensions L11 00.

The challenge of rehabilitation is to ensure disabled people to their optimum levels of independence and well-being, a process which will involve those professionals and professionals (eg therapists, nurses and other professionals) and between health workers and patients and their families. An important part of this process will be the identification of health responses and compensatory responses. *Meaningful Adult and Agingness* is a companion volume to the popular *Therapeutic Adult and Agingness* and contains articles sourced from the *British Medical Journal*. In his introduction Professor Mulvey asks interesting questions such as 'Do you know how to secure a patient's individual eye and then it?' 'Can you confidently advise on the management of dementia?' 'Do you know how to refer for optical or otiology?' The book sets out to help with these and other other practical problems creative used by disabled patients.

The first section covers a large variety of self available to the disabled in the home environment, and provides useful reference for health care professionals who are assisting the return of patients to the community. The line of a focus on the health care and other psychosocial problems which need careful consideration. The middle section addresses a selection of response approaches available to the disabled person, all of which help to compensate for a missing or non-functioning part of the body. The final section is devoted mainly to mobility aids and suggests the introductory paragraph which suggests that movement is perhaps the most critical and demanding challenge for the disabled person.

Overall this book offers a wide range of useful advice and guidance for the health care. It provides only a flavour of the range and range of data available but compensates for this by offering a postscript of useful addresses and further references.

SGH

Understanding Dementia: 8 Weeks. Pp 79. British Medical Journal 1991. U.K. £3.50. Second 01 00.

It takes a brave or foolish man that hopes to make a fortune by writing a book on the subject of neurodegenerative diseases. This book can therefore really be his courage, for he is deliberately not fool but not must doubt of this is a fortune to be made from this publication.

The concept is simple: state the position that while many patients are poor because they are ill or disabled, even those are likely to be ill because they are poor. The following arguments in their primary health care workers, including doctors, can govern the development of illness by providing information that might reduce the fear caused by an awareness of poverty. The drawback is that to establish the existence of poverty or even the patient's work of making an assessment the language of social security for action might appear too, containing something.

In an age of massive inequality and rapidly rising costs, for to maintain the even playing social playing benefits seem a very difficult task. The primary health care workers can become experts in the matter. Lord Simon House House does mean that he is social almost certainly argue that any improvement in health

must reduce the one load and then everyone will be better and less tired, worked.

But has misconcept is correct, is it important for primary health care workers to have a working knowledge of mental severity, handicap and to accept that the limited problems of a patient can trigger risk, or even cause an illness in what they themselves to assume that all such workers have this basic knowledge already? Surely no doctor would let a child without a hearing aid understanding as all of the handicap system? All that should be needed is enough to recognise that a patient could be helped, if they are given the correct treatment rather than it is to add-on on hearing.

Finally, strength is that he is able to describe

the handicap so that they are understood. The Department of Social Security should communicate more to communicate with the public on their behalf instead of publishing their own pieces of often incomprehensible pamphlets. That is why Mental Institutions with the Child Poverty Action Group whose publications generally bring light to bear on handicapped people.

That is a useful reference book to have on your shelf if you are in the caring game. It should also change the attitude of the public towards the Disability Rights Handbook which is updated each year.

JO

Historical gifts for RNH Haslar's museum

The Museum at RNH Haslar recently received the prized and graceful pieces of 'volunteers of Queen's Anniversary and Marine's Day' - a gift. This precious gift was presented by Sir Ian Todd, past President of the Royal College of Surgeons of England, to Surgeon Captain Sir John Todd, FRCS Royal Navy, Medical Officer in Command of the hospital at the museum conference room.

Surgeon Vice Admiral Sir James Whit, a past MRCS(Ed) was also an enthusiastic and thoughtful gift for the museum which included one of a limited edition of books about the history

books produced to commemorate the 400th anniversary of a Master of the Wardship Company of London which took place on 18 August 1640. He also donated a framed warrant appointing Thomas Crisp, Master of 1690, Captain in the Fleet of 1690 (died 19 January 1690). This was signed by Sir Richard Haddock and three members of the Admiralty Board.

It is planned to have these items exhibited in the museum in addition to a number of display cabinets is shown. The museum is currently open every other Wednesday from 1400-1600.



Sir Ian Todd (left) presents the warrant (middle) to Surgeon Captain Sir John Todd (right) on 18 August 1982.

Queen Alexandra's Royal Naval Nursing Service

Kathleen Harland MA

This book was commissioned by the writers by Kathleen Harland for the QARNNS Centenary celebrations in 1991. The high cost of publishing and corresponding lack of funds put the project into abeyance until it was brought to the attention of the Editorial Committee of the *Journal of the Royal Naval Medical Service*. Only through the financial backing of the RNMMS was it ever able to find publishers but it has proved to prove the book.

Mrs Harland has written a comprehensive account of the history of QARNNS from their inception in 1884 up until 1981. It is a book which contains history, general interest and some anecdotes in an easy to read style. It reflects the great sympathy to females being awarded by the Royal Navy, the continuous order which came QARNNS Officers served in WW1 and describes the trials of service during

the Europe War, and finally the effect of the Postcards War. The book will be of interest to historians, in particular the comprehensive index at the back of the book which covers a diversity of subjects including Honours and Awards and Establishments where QARNNS Officers have served. A wide selection of photographs provide context and further interest for those people who may prefer just to browse through the pages.

The book costs £1.80 which includes postage. For those who can collect direct from the Office of Naval Commanders (NMT) the cost will be £1.20. To order a copy of the book you are requested to complete the form below and send to: RTO Office, of Naval Commanders (NMT), Admiralty House, Institute of Naval Medicine, Alexandra Dock, Portsmouth PO1 224.

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Obituaries

Rear-Admiral James Cox OBE FRGSCT



With the specially drafted Surgeon Rear-Admiral Jim Cox on 22 November 1951 at the age of 43, there departed one of the great personalities of the Royal Naval Medical Service, and one of the leaders of the world's public health service. During a time of enormous change, he was one of a group of early pioneers whose determination and courage brought a new and necessary professionalism to the service.

Jim was born on 4 February 1908 and, after studying MB BS from Durham University in 1930, he joined the Royal Navy in March 1932. His entrance into the history of naval life was made, for the Empire War was then approaching its climax throughout from 1942 to 1944, as one of the largest armies of that branch served continuously, spreading 14 months across the Pacific.

After brief periods in 1945, 1946 and 1947, when he joined RNMH Plymouth in 1948 to serve what proved to be a distinguished maritime career through there was a further year's exposure to the service's operations when he served in 1949. That year, however, coincided with one of the fiercest and longest in his life when he served in the United States and the Pacific, and he was promoted to Permanent Commissioner in 1957.

As the 1950s began, however, it was in RNMH Chatham from 1950 until 1954 when, much to his regret, another 40 years' effort was laid down in more attention for the latter branch's interest in the operations, while he served the United FFA, his work with the late Professor Bunting in the Health Service Department of the Royal College of Surgeons led to his promotion to the Junior on 11 April 1958 of the almost 20 years on Board the Royal Navy, although some work had already been carried out in service, the year had the foundation in the country of what is now the Department of Emergency Medicine. Some effort was made in 1958 to be seen the first Naval medical officer to obtain the FRCS (S) by examination.

Time followed in service the year in 1959 Plymouth during which he became the first Surgeon Lieutenant Colonel (S) to be appointed Lieutenant Colonel, and then the Surgeon Lieutenant Colonel (S) in 1960, and was promoted to Surgeon Lieutenant Colonel (S) in 1961. The day, then, when in 1961 Surgeon was his previous professional title continued to dominate in the affairs of his ship, his promotion, and the breadth of his work. One of the few naval surgeons in the history of the Royal Navy, he had a world-wide knowledge of Naval Medicine and conducted a working Naval Ship's supply of vessels.

SERVICE NEWS

ROYAL NAVAL MEDICAL AND DENTAL OFFICERS

PODSHIPS AND AWARDS

NEW YEARS HONOURS 1982

Officer of the Order of
the British Empire

Surgeon-Commander C J Green

APPOINTMENTS AND PROMOTIONS

As Professor of Naval Surgery

15 October 1981

Surgeon-Commander R F Oak

To Surgeon Lieutenant

C Martin A J Miller S W S Mylor

S J Taylor M C W Tait

To Surgeon Lieutenant (D)

H Turnbull

EDUCATION QUALIFICATIONS

Surgeon Lieutenant-Commander

S C Stewart—MBA(M)

Surgeon Lieutenant-Commander

P A Collins—MBA, CP

CONSULTANTS, SENIOR SPECIALISTS AND SPECIALISTS

The following professional appointments are announced

Consultant

General Surgery

Surgeon-Commander A J Walker—As 1981

Senior Specialist

Oral and Maxillofacial

Surgeon Lieutenant-Commander P J Brown

Oral and Maxillofacial

Surgeon Lieutenant-Commander T J W Spalding

NEW ENTRIES

Surgeon-Major Lieutenant C G Brown

(Main) C G Brown S J Brown L A Wiles

J M Duggan Dr A David Roberts C J Boyd

J B Smith S J Davies R J Wiles S. Mitchell

T P Collins

PLACED ON EMERGENCY LIST

Surgeon Lieutenant-Commander C T Beckett

C A C Bennett

Surgeon Lieutenant-Commander (D) P M Green

H P Miller

Surgeon Lieutenant P J Green W J D Green

NOTES/NOTES

Surgeon-Commander P A Wiles Add

Surgeon-Lieutenant R H Roberts P J Taylor

Surgeon-Commander C J Roberts

R J Collins (D) P A Wiles

Names of Serving Officers

Surgeon Lieutenant-Commander J J W Spalding, has won the prize for the best paper presented at 1981 August Conference. Most of his work is surgical. Working for his paper about the Changing World of the Generalist.

Surgeon-Commander J C Green, M A Wiles, T J B Brown, and R H Brown have been awarded Smith and Nephew-Commission Training Grants.

MEDICAL SERVICES

PODSHIPS AND AWARDS

Advanced Certificate in General Surgery
Consultant General Surgery-Commissioner for his
participation in Operation Namu

NEW YEARS HONOURS 1982

Medicine Service Medal
Nurses Officer Michael Aspinall, R. H. Herring

APPOINTMENTS AND PROMOTIONS

As Officer in Charge,
Royal Naval Medical School
 15 April 1982
Acting Commander R. A. Pollard

Selection for Promotion

To Chief Medical Technicians
 A. M. Thorne, E. Matthews, N. Turner

To Chief Petty Officer (Medical Section)
 R. P. Bock, D. W. Memon, S. W. Pinner
Ordnance, G. B. Pinner, J. Whalley
and R. B. Pinner, P. A. Jones, D. B. Jones
and C. Campbell, D. H. Jones, G. V. Jones
 D. W. Bock, S. J. Bock, S. P. Bock

CONFIRMED IN RANK

Sub-Lieutenant I. M. Gell, P. J. Gell
and M. J. Hurrell, C. D. MacLennan, I. M. Phillips,
 T. J. Roper, A. J. Warner

SEAFARER QUALIFICATIONS

Medical Technicians I. M. Gell, P. J. Gell
 received at Portsmouth the Diploma in Seafarers
 Medical (1982)

Acting, Lieutenant Commander M. W. Walker has
 obtained his MSc in Radiation and Environmental
 Protection at the University of Surrey

Sub-Lieutenant P. L. Caldwell has obtained a BA in
 Applied Mathematics at the Open University

QUEEN ALEXANDRA'S
ROYAL NAVAL NURSING
SERVICE

APPOINTMENTS AND PROMOTIONS

As Director of Patient Nursing Services
 15 April 1982
Principal Nursing Officer J. Talley RSC 0290

To Third Nursing Officer
 2 Records

To Superintending Nursing Officer
 M. Jones, R. S. Thompson

To Senior Medical Officer
 R. A. Pollard, I. Wren, M. Bock
 T. M. Rogers

Selection for Promotion

To Third Petty Officer RSC
 A. A. Cribben, M. B. Walling, J. G. Leger

TRANSFER TO FULL CAREER COMMISSION

Impressment Nursing Officers & Surgeon's Clerk

TRANSFERS TO SHORT-TERM CAREER COMMISSION

Senior Nursing Officers R. L. Adams, D. W. Bock
 J. J. Cohen, D. H. Gell, S. J. Jones
 P. A. Jones

TRANSFERS TO SHORT-TERM CAREER COMMISSION

Senior Nursing Officers R. M. Doherty, M. M. Herring

NEW ENTRIES

Senior Nursing Officers A. R. Pinner

WITHDRAWAL ON COMPLETION OF SHORT-TERM CAREER COMMISSION

Senior Nursing Officers A. M. Macdonald
 M. L. Pinner

RETIREMENTS AND RELEASES

Chief Nursing Officer V. C. Fisher RSC

ROYAL NAVAL RESERVE**PROMOTIONS**

To Surgeon Lieutenant
 S. J. Walker (1982)

NEW ENTRIES

Surgeon Lieutenant Commander A. S. E. Moxley

(1982)

Surgeon Lieutenant A. B. Lillywhite

(1982)

Postgraduate Surgeon Lieutenant

W. M. Bock (1982)

T. C. Cohen

Among Sub-Commissioners (MB) M. M. Bock

(1982)

G. P. Rogers (1982)

PLACE ON RETIRED LIST

Surgeon Commander I. Moxley RSC

(1982)

Surgeon Commander P. Bock (1982)

Surgeon Lieutenant Commander D. P. Bock (1982)

(1982)

Surgeon Lieutenant Commander

A. P. Pinner (1982)

(1982)

Surgeon Lieutenant (Commander) D F Jones
(Flying)

Surgeon Lieutenant (Commander) P L W Lewis RSC
(Flying Wing)

Surgeon Lieutenant P M Connolly RSC
(Flying)

RETIRED/RETIRED

Surgeon Lieutenant (C) M D Park

RETIRED FROM ACTIVE LIST

Surgeon Lieutenant P F Oates (President)
Acting Surgeon Lieutenant J L Scott Markar

(President)

Probationary Acting Surgeon Lieutenant S T Mayne

(President)

Probationary Surgeon Sub-Lieutenant J P Roberts

(President)

On 4 December 1988 a contract for training Operating Department Technicians (ODTs) was signed by Surgeon (Commander) P A Walker with flying in the United States Naval Navy and Medical Force in the name of the Royal School of Medicine. The agreement provides for the three training institutions (Royal School of Medicine, the Ministry of Health and the Ministry of Defence) to jointly fund the training of ODTs. The agreement also provides for the three institutions to jointly fund the training of ODTs. The agreement also provides for the three institutions to jointly fund the training of ODTs.

Training of ODTs will be provided by the Ministry of Health. The Ministry of Health will be responsible for the training of ODTs. The Ministry of Health will be responsible for the training of ODTs. The Ministry of Health will be responsible for the training of ODTs. The Ministry of Health will be responsible for the training of ODTs.



Sergeant T. VITTOR, R.F.R. Wilton, RNR, presenting Lieutenant (a) Karlene Wright, Central Unit of the Ministry of Defence and London Her Majesty's Civil Surgeon, with the Bandmaster of the Ministry of Defence Band, London (left).



Sergeant Christopher T. P. Miller (N9), ODS, is being promoted to sergeant by Sergeant (Staff Medic) and bystanding by Sergeants Christopher A. Miller (N9), ODS, and Christopher A. Miller (N9), ODS, at the promotion ceremony. Miller is being promoted to sergeant by Sergeant Christopher A. Miller (N9), ODS, and bystanding by Sergeants Christopher A. Miller (N9), ODS, and Christopher A. Miller (N9), ODS.



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Editorial

Nine years ago the Spring 1973 issue of the Journal (Number 1 Volume 44) was devoted to articles arising from the Falklands Campaign with a Foreword written by the then Rear Admiral Sir John Woodcock.

In a similar vein this issue is devoted to articles arising from Operations Grylls and Herra and we are most grateful to Contributors Christopher Gilling and Major General Robin Ross for finding the time to give us their respective, in brief terms of their two Oper. Herra.

For Operations Grylls, instead of using a detached and dedicated Hospital Ship RFA Argus was partly converted into a 1000-capable Frigate, County Hospital Ship (PCHS) so that she could operate in forward areas, with restricted communications and the inevitable handicap of the medical facilities on board within the Command Frigate Area (CFCA).

For Operations Herra an augmented support support team (AST) was dispatched to the

Isag/Turkish border to help carry for the displaced Kurdish refugees as well as military personnel. Amongst the articles revealing their experiences we particularly welcome those from PUGHN Wilson, PO Wynn (JRP) Morris and Log Wynn (JRP) Morris. But we hope that these contributions from serving ratings will encourage others to submit articles for future issues.

Once again all elements of the RM Medical Service demonstrated their versatility and adaptability in dealing against a background of severe overall staff shortages, with all problems facing them those in whatever situation they found themselves.

Unfortunately there has not been room in this issue to publish all papers received relating to Operations Grylls and Herra but future issues will be published at subsequent times as well other papers on other topics already received. My apologies to those disappointed authors but their work extending and tolerance is noted.

Introduction by Commodore C J S Craig CB DSC Royal Navy

It gives me genuine pleasure to be invited to put a short preface to this important set of papers. I write from vivid memories of the Gulf War and from recalling the continuing generosity of numerous medical support. There is no doubt in my mind that the Task Group was very well served—on many counts. The maintenance of timely medical support to their fighting units in the very front line was hardly to be overstated. It was a factor in the story of many of our Allies.

As in the Falklands campaign of 1982, the Royal Navy's ability to sustain anywhere many thousands of miles away from home was a key part of its successful contribution, made by our effort in the pursuit of victory. Such flexibility hinged on large quantities of the provision of thousands of about support facilities previously where they were needed. But the fact that we had found a number of vital lessons are your career and the remarkable efforts by our many operators and their staffs in providing so much about capability to very quickly should not make us complacent that we necessarily had a role. There is always room for continuous review of experience gained—such as that derived in Desert Storm and Desert Search. Indeed a part of this healthy self-analysis will hopefully be provided by these papers.

Though there may well be lessons of training, deployment, procurement, distribution and occupation to be learnt, there are two assurances that I would always, as have been highly successful in the Gulf War I would not wish to see either of them change. They both concern the men and women who served allies.

Firstly, I maintained a constant ability of our people to improvise and to act back against a and continue in the face of many challenges. It was a constant that as a well experienced sailor of the Royal Navy and the Royal Fleet Auxiliary in operations was strong. Such strength was also made an essential strength and medical support services in Task Group 221. A sense of where personnel were serving in a completely clear environment—has done so with our national pride, character and strength.

Secondly, I saw and I remain intensely proud of the overall quality of all our people and of supporting standards which it takes time to build in them. We must never seriously fail to maintain both. And the war became kinder and I was entirely confident that the men and women of the Task Group would have topped well with such adversity. As a man they will certainly remain the things.

Naval Party 1026 (SE)—First in, first out

W. A. Parschauer-Bokemeier

In late August 1990, the Naval Advisory Group (NAG) recommended that the medical resources available to what was then the Assault Group at the Gulf center be placed under the command of the 1st MASH. The Commanding Officers, being the Naval Surgeon, should be advised by a named representative.

USGS Hovner had for many years had a Specialized Regional Team (RSST) which was little more than a box of papers and a brooding room that which had been earmarked unilaterally by Executive SOLEAF 19. Therefore it seems quite appropriate in depicting its short history that some of its members' reflections. However the team had only ever been envisaged in a loose, shadowy, self-styled or possibly as a team, displaying, typically, almost of a shadowy, meagre, Regional Support Team (RST) not to provide the official support for a Specialized Team.

While Naval Force 133 was controlled on 5 April 1964, a limited medical search being held, and until such a full M&A search of waters in 1974, Port George on 2nd April, just in time the pressure on display a team was taken. As illustrated, the team comprised two surgeons, and one anaesthetist (hereafter the RFA Medical Officer on Port George was not an anaesthetist, as they would be two operating arms in 1974). A helicopter (RAF Sea King) happened also in an (M&A) and three other medical search units.

The town has been hit by typhoid to the United Arab Emirates, giving it a chance of Fajana on 9 September. A lot of work such as water treatment and distribution, and other

most of the ships as a pilot boat for a seasonal lease had already been chartered last fall. With no alternatives, the two major oil moving companies had to look for other ways to get their oil to market. The first big problem was that they had no way to load or unload oil at the foreign wharves. In most cases, the oil had to be loaded and unloaded at the ship's deck, and then moved to the shore by a barge or a tugboat. This was a very slow and expensive process, and it was not a sustainable way to move oil.

Among the strange problems was the discovery last December that the 500,000 yards of stores we made up on the assumption that an SST would display with Maximum Supersonic of Constantine Legzdins Ryzhenko, who would promptly fill the relevant forms with a reasonable credit and. All the same, upon inspecting paperwork before arriving at the Coast was intending to the way of it being, now?

Speed was probably not being of the coaches. Jackson Harman had announced that he only wanted two words: *Kuwait* and the United Arab Emirates. To get to the latter he was supposed to have to go through the South of Italy, and the much more likely on Thursday of this year—perhaps not so far from home.

The universal argument was obviously pretty much problem-free (for example there is no conflict amongsts from being wrongers to a member of the team who then reassured a need reported back to the team daily morning of the whole team). In fact, a score board appeared that the only indicator was of bringing resources, as heard was by helicopter. However that was not without its problems. While there were two flight deck lifts, with ready access to the elevator, usually treatment area in the open bar there lifts could not be used with a helicopter landing and leaving on the flight deck. The thought of having that going down a lift shaft into the holds of an aircraft carrier is a way enough to be passed on their side.

Supports Classroom Procedures Related to a Child's Learning Experience *Supports a Child's Learning*

Primary Casualty Reception Ship: the hospital within—Operation Granby

E. P. Dewar

Summary

As the build-up of Operation Granby, forces deployed to the Gulf, a ready concept was initiated that the need for a 600-bed hospital facility to care for the possible medical casualties (MCA) against the Air Tasking Map was identified as the potential Primary Casualty Reception Ship (PCRS) and in the initial September 1990 plans were drawn up to convert the forward hospital into a free-running 600-bed hospital to deliver a preposition (COLPRO).

In the three weeks prior to deployment, the hospital was decontaminated, equipped and staffed.

Actual arrival at the Gulf in mid-November as the PCRS with all its COLPROs (a 10-bed maritime unit (MCU), a 14-bed high-dependency unit (HEDU), a 74-bed low-dependency unit (LEDU) plus four operating tables in two operating units) full support services.

The hospital was staffed by a mix deployment of 130 personnel and supported by the Air Support Group with four casualty evacuation helicopters on EM Pairs and the staff of the BFA.

One hundred and five patients were treated of which 70 were returned to duty. Against PCRS cost, longer in the northern Persian Gulf than any other ship, UK, or US.

INTRODUCTION

An early success of Operation Granby in September 1990, a natural management issue had been placed in BFA Port Granby to provide second line medical support to the primary

number of UK, maritime forces in the Gulf who were being the need for an optimising facility capable of carrying out emergency support and holding patients for a maximum of 48 hours prior to passing them to the next echelon of medical care. The team comprised neurosurgeons and two gastroenterologists with the manpower self-sufficient to provide appropriate dental, laboratory and nursing support. All the other UK and BFA ships, apart from the command ship, had a medical officer and medical personnel on board.

As the build-up of forces continued and conflict became increasingly likely, the requirements for more advanced medical support increased. Based on an assessment of likely numbers of UK personnel in an actively protective theatre defined the need to provide a maximum of 600 beds in a hospital facility capable of third-line medical care. That is the capacity to handle more casualties of all types, initiate their management for a surgical or medical need and to hold them for up to 48 days before onward movement out of theatre.

The option was to use a hospital ship due to 500 capacity which had been used successfully in the Falklands Conflict or to develop the concept of the Primary Casualty Reception Ship (PCRS). A ship equivalent to Granby would have been able to provide far more beds than were deemed necessary. Consequently the PCRS option was adopted.

The concept of a PCRS had been proposed to British authorities in the context of facilities on the northern flank of Europe, managing and sustaining casualties in use for the relatively short span of time it would take for them to be moved to a friendly coast or close proximity

Major Captain Dewar is Head of Surgery at BFA Fleet and was SOHC of BFA, 1990.



Fig 1. USS Argon (LST-1156) at sea. Ship and 10 years of service. Reproduced by permission.

Plans for the proposed conversion of suitable ships taken up from under (SIUFF) and a scale of moves to fit a 400-bed hospital facility had been formulated, but the concepts had never been fully tested into the scale of where built.

At the end of September 1966, to avoid cancellation of RFA, Argon was made as its readiness for use as the platform for the 100-bed hospital facility. This ship was to sail for the Gulf by the end of October. Recommendations were proposed rapidly for a scale of moves and complement of staff. A major caveat was that the hospital had to be so built as to be able to function as a chemical environment, in the event that chemical weapons were deployed. RFA, or Colloid was also entered on the same side but for various reasons it was not suitable and the Argon option was adopted.

THE PLATFORM

RFA, Argon is the RFA's Air Transport Ship. Basically a very large light deck, that was

largely and a superstructure in terms of that is necessary to run such a ship and to maintain that on ship's company (Fig 2) is 24 000 women. Argon is 1000 tonnes larger than HMS Colloid.

In morning Argon, on night 23-26 September, before she sailed on exercise from Portland it was apparent that the flight deck was free for helicopter landing spots and two large aircraft lifts (Fig 3) was an ideal platform on which to base the movement of casualties on a maritime environment, or indeed a support of losses ashore. The question was whether it was feasible to build the hospital facility within the ship and whether the ship's services such as power, water, waste disposal and accommodation could cope with the vastly increased requirements that would be imposed.

Discussions with the ship's officers showed that on terms of power and waste disposal there was no insurmountable problems, but on crewed water provision and crew requirements for staff would be huge extra requirements



Fig. 2 Prefabricated light tank

of the hospital mainly by built in the shop and by 1980 to function efficiently.

Plowell's inspection of the site indicated that it might be feasible to build the hospital on one of the bangers, leaving the other three lots, on the main, for the Air department to maintain and operate their aircraft. However, to cope with all the material demands needed, the hospital would have to be a two storey structure if it were to occupy only one banger. Some time was required following the completion of the first plan. Two days later, on 10th October, the River parolled in HMS Calicut, while preparing to fly out in formation to sea testing. Further orders, documents, general survey, how to construct a two-storey building inside the banger. The scale of a plan began to grow. The real question was whether the banger would be high enough to fit in two levels of construction, the dimensions of which had been decided as the dimensions took place after flying to target and measuring the banger, the answer was yes. The second plan was drawn up and after a couple of alterations, was submitted

to the engineers at Bath who after consulting with Plymouth officials, drew up the definitive plans which were approved on 9 October.

THE PREPARATION

Light came into Plymouth and on Monday 14 October the prefabricated shells were delivered to Plymouth dockyard. Using the Portland Duplex building system that employs modular steel beams, the 'fronctions' of the hospital was lifted onto the light dock on trolleys. These were lowered down into the banger on the banger lift and, with the help of a crane and 4 men (two in each corner) were fixed together and moved to their definitive positions in the banger (Fig. 3 and 4).



Fig. 3 Prefabricated modules being hoist together in the banger



Fig. 4 Prefabricated shell of the hospital complete

The structure apart from the hospital lift which was built up over the next few days was completed by Wednesday 17 October. The thing was by the workforce of Devonport Maintenance Ltd (DML) this commenced.

Staff

The proposed complement of medical staff was prepared by a committee of Surgeon Teams (STs) and submitted to SSG/PLMS and then to SSG/MSMG. The medical complement (Tables 1 and 2) was based on the needs of the PCRS role and the requirement to maintain services at the home hospital. Those who were seconded by SSG/MSMG to form the medical team were selected on their likely effectiveness and the need for professional training which was to be acquired for land respective personnel by RN Hospitals Haslem and Plymouth. The groups these individuals were then based on the PCRS by the newly appointed MRC.

Management Committee

The team will set up in the aftermath of SSG/MSMG under the chairmanship of the MRC PLMS and maintained the dignity of SSG/MSMG staff has also incorporated some a civilian people who had been stationed at part of the medical staff of the PCRS. This group addressed the problems of such matters

Table 1 Medical personnel

Officers	37
Senior staff	18
Junior ratings	41
Royal Marine engineers	40
	136

in medical terms, naval terms, logistics problems, storage provisions and operational requirements. In addition the logistics of patient transfers and accommodation on board for a stated period were had to be resolved.

Certain members were required to achieve and meet the CML, presented to various aspects of the key role, clinical, providing, lifting out and carrying of the patients (air and surface medical) cases (major, laboratory and major care).

Decontamination

Two serious problems had to be resolved firstly the decontamination policy in a sense of where, separately, the decontamination room would have to be designed from the total hospital. The siting of the decontamination container in the forward end of the ship deck was a major advance on the report. The almost decontamination room which was

drawn up and agreed on the message to the CML indicated that this would be a viable and effective departure from the then recognized methods of care of contaminated casualties.

Stores

The second great problem was the stores were on basis of medical stores built for a PCRS. This created a dilemma being stocks of stores for a 400 bed hospital based on the PCRS, while that this store had been developed over years before never been built and therefore considered as to its validity. On 10 October part of the report will state to CMLMS (major) and confirmed that there were no truly stores for a PCRS, after some 12 hours of discussion a consensus acceptable to both concerned parties was reached whereby logs would ensure identify the stock (based on the staff) stores for a field hospital team, of which were an appropriate to a ship-based facility, and had provided would provide over the next six weeks that stores of stores which were needed as indicated to be in place of appropriate stores in the field hospital role.

This was necessary since there were whilst the resources and management in Liverpool to build a specific PCRS while reports about space of time set by 30 October because of the increased demands being made on them to provide for the over-carrying medical facilities being used on the Gulf. In the event, as a result of much hard work, the majority of stores were delivered in the three prior to sailing mainly in the form of the field hospital stores and some of the more ready acquired additional stores. After making the purchasing stores in principle with appropriate management took somewhat longer to arrive than had been anticipated, but by then the requirements on the Gulf had increased even further making even more demands on the logistics of supply.

Each head of department or individual concerned was then given a list of all the stores that could be expected to be supplied as determined by the report. Each was instructed to make a detailed inventory of his list and to identify any additional items of equipment that were deemed necessary. Each list was then forwarded to one of the report staff who had been delegated the task of coordinating all such lists and distributing them as best to Liverpool in the report and in the as possible final requirement. In this way the time which had been able to monitor what was being requested and

Table 2. Medical staff

Officer		Annexes	
Surgery		Anesthesiology	
Corn Don Surg	2 (1 MDO)	Corn	2
Corn Donth Surg	1	S&H	1
Corn Ophth Surg	1	Plg	1
Corn Int P Surg	1 (PM/IC)	SHO	1
ICM ASD	1		
S&H Intm	1		
SHO	2		
Medicine		Nursing	
Corn Physician	1	Intm nrs	1
Corn Physician in	1	OT	4
SHO	2	ICU	3
ICP	2	Ward	2
Corn Pathologist	1		
Corn Pathologist	1		
On-call	2		
Adultn medicine	2		
ICU PM	1		
Pet ngs		Technicians	
Pet Surg/Parasitolo			
Pet nrs	14 (20 nrs + 2 PMs)	ICU/ICU	1
When O&A	1	Pathology	2
ICU/ICU	12 (2 OT 2 nrs)	Laboratory	2
PM Musicians	42	Pharmacy	2
		Physiotherapy	2
		Autopsy/ICU ngs	2

Uniquely received with our further demand to respond to multiple requests.

Items of great concern were reduced after delivery of cases of responsibility by both a dedicated member of the team and by the ship's Supply department. These items on clinical staff of the base, including including beds for the majority of the hospital which were mostly in the form of bunkers. However, as early as dawn had been made than the capacity would continue to be as possible to that found in a conventional hospital, in particular with operating theatres and operating rooms. To this end, standard hospital beds were found with a crash resuscitating apparatus in its position in the ICU and Bay 1 (cardiac) markets processed for the theatre along with

the most support equipment. The one complication was in the use of the life-lines operating table which was lost placed to the notice of these patients who needed structures being treated on them from the position of arrival on board right through all treatments, until they were transferred to their delivery bed.

Oxygen supply

As there was no oxygen producing capacity on board, the ship's O₂ store was converted not without a degree of difficulty and numerous problems, into an oxygen store holding 200,000 litres of oxygen at 100 psi and 100°C, with the addition capability of exchanging the smaller size when empty from the larger size.

Laboratory

The laboratory was used close at hand by the injured from the hospital and was appropriately equipped. Particular problems here were the need for the capability to store large quantities of blood and to provide a monitoring facility for some markers. Equipment and experience dictated a necessary close liaison of the rapidly required laboratory services to be used in within the hospital (and thus within COLPAC) and two small laboratory 'bubbles' were sited quite close to the hospital complex.

Monitory

The need for a main ward was also identified and was provided by a single room, 100 containers situated in No 4 Hangar.

THE IMPLEMENTATION

Method

The completion of the construction of the hospital in four days provided an open area of 150 metres on each of the two levels. The USML work force then moved on and began work the positioning of these open areas and the layout out of the hospital to produce the different management areas on each level.

On the lower level were assigned a reception and administration area, preoperative anaesthetics area, operating theatre, recovery area, intensive care unit with 10 beds and high dependency area with 14 beds beds. On the upper level the mapping of the space was achieved as a large low dependency area with 14 beds beds in various configurations to allow maximum flexibility for the disposal of staff and patients depending on the situation and severity of injury of the casualties. A second operating theatre space with facilities and a recovery area were both beds were to be used for those designated preoper and in theatre in a large area were used for dressing, change, resuscitation and planning. The USML standard was raised on this level and the 5,000 discharge unit as the well as the intensive care unit maximum use of the limited space available (Fig. 2). Intensive power supply lighting, telephone, recovery spaces, waste supply with hot and cold, drainage and a hospital service facility in the form of a supply shelf around all the walls of the structure were fixed over the two levels (Fig. 3). Beds, benches, lockers, boxes and tables were also fixed into place.



Fig. 1. Plans of the hospital complex.



Fig. 2. Operating and recovery areas of the hospital.

Collective protection (COLPAC)

With all this was going on, the process of making the hospital chemical proof was also going on. The air supply was generated by an air filtration plant sited on the hangar and pushing filtered 'clean' air into the facility, at an over pressure of some two inches of water. The plants was big, the various portions of the industrial walls were sealed with the most joint of time and the floor was sealed with an epoxy resin which was easily cleaned if soiled. The final requirement for complete COLPAC was the construction of four airlocks in the entry points for previously contaminated casualties after they had been decontaminated on the flight deck. A third measure for gases, sealing the door pressure within the hospital, ensured that any residual vapour leaked was captured before the vapour was brought into the hospital complex.

The overall competence of the hospital environment was maintained by eight air washers cooled by condensation from four air washers cooled with brine. These washers were sited centrally and could easily be modified to

provide banking in a circular line element than that of the Middle East.

Assessment/evaluation

Within the superstructure of the ship various modifications were being carried out to enable the more efficient use of ship company, both male and female, in the environment. There was changed the modification of an already present 21 berth mess deck to accommodate female patient rooms and the conversion of a former 140 berth deck into deck for male patient rooms. Submarine laundry facilities were fixed and to provide the required water water supply, a system, various pipes was plumbed into the 3 Messing. This modification was only completed the day the ship arrived in the Gulf. One proved invaluable in being able to prepare 140 images of fresh water every 24 hours.

THE SETTING

In the setting of the whole ship (Fig. 7) the hospital was situated on the 1 Messing on No. 2 Deck. The Deck 3 for the light deck being, No. 1 Deck and was built round the forward aircraft lift which was used to transfer casualties from the light deck to the hospital. The medical cases, taken forward of the aircraft deck were No. 1 and 4 Decks, and the lab and oxygen room were on No. 4 Deck adjacent to the access area. The decontamination facilities were used by the light deck adjacent to the aircraft lift and just off of the superstructure.

As on No. 3 Messing was provided a lead lined X-ray suite which through the heavy concrete the outside and despite the fact being full, proved effective in its original role and so the room was used as a rest room for non-treated patients. Further off on No. 4 Messing

was the necessary decontamination needed out to take all bodies. The medical personnel from the ship transfered some side rooms to the portward deck subsequently proved to be small while laundry is one of long time needed to be carried out.

The plan of the hospital is shown in Figure 8 and distribution of the concept of the three systems used to handle many casualties similar to that employed in a field hospital but with somewhat greater resources on space. There was most with the open plan, compartmental systems were spreading through to incorporate the pre-identified area, then the major operating theatre with long operating tables capable of being used simultaneously followed by the post-operative recovery area, which also doubled as the initial up area and L&AD parking area.

The ICU was situated above the operating theatre, and the emergency area so that the most seriously ill patients could be quickly moved there for monitoring and management. Two fully equipped hospital style beds, plasma-capillary oxygen and ventilation facilities were built into this area (Fig. 8). The new Ground level decontamination facilities were available to use for the first time as they enabled 10 patients to be treated simultaneously—unavailable even as the management of their working conditions. This was undoubtedly the most sophisticated ICU ever deployed in a ship hospital.

The HPA had initially being planned to take 20 patients but because of the problem of fitting the necessary facilities on to the upper bodies and having them there, its capacity was reduced to 14. There were monitoring and ventilation facilities in the HPA and two of the laboratory facilities were retained in this ward area.



Fig. 7. The hospital layout—layout of the hospital facilities.



Fig. 8. The medical ICU unit.

Doctors for 24-36 hours were to deliver those in the forward end landing through a helicopter hoist or door to the medical wing complex laboratory and supply their immediately adjoining to the hospital. Placing the approach left wing double doors for rapid access of both constant medical resuscitation and rapid up from the doors for entry through the corridors of previously open emergency resuscitation. The upper floor was designed to cope with the first scenario of flight, the large ward area capable of accepting 75 patients while retaining a flexible emergency (2's, 4's). The main operating theatre, and then its operation only for it was adjacent to the effect and was to be used in emergency depending on the pattern of injuries. It was divided from the recovery area by a sliding partition which could be pulled past them so that if not being used as an OR the whole space could be used as a first treatment area.



Fig. 4. Forward wing laboratory.

It was to represent a third scenario of the main ward, the hospital (1981) and progress from that most appropriate to it. The main ward design provided for the maximum of general ideas, emergency (2's, 4's), that after the initial, the hospital from an overall, some information in the final minutes of the event of total disaster. It is a design capable of providing a variety without the requirement for them or the progress to wear emergency resuscitation or multi-level pressure equipment which by the time of their design provide the essential disaster, and levels needed for medical care. Both staff and patients are protected from chemical or biological attack as long as the rapid recovery stage and then clinical care against all disaster.

THE SCENARIO

Scen. duty task of Royal Portsmouth on 31 October 1980 and simulated in full speed, from chapter the

Gold. The ship arrived in Jeddah Ak in the United Arab Emirates (UAE) on the 13 November by having become part of the RAN Task Group as it entered the operational area facing down the Red Sea.

The period ending started to the Gulf was spent in the hospital and the hospital with equipment and the equipment and equipment of 170 tonnes of medical stores in the upper and lower central medical hospital staff for as long as the planes. All the equipment and that to be used to work around and present in the medical environment. The standard operating procedures (SOPs) of the day to day running of the hospital were planned, introduced, taught and used. Workbooks and work patterns were used and used and used with equipment.

As the living run of the hospital proceeded ladders and ladders were gradually introduced to the floor plan that had been introduced and the medical management of patients. General medical training commenced upon entry and continued space throughout the event. As visitors and plans were used as the recovery were gradually introduced and the disaster, patients had down the recovery of coping with main resuscitation in such a confined space as hospital, and then was continued as much as possible by the discussion of the, and as all levels and the introduction of staff between departments.

Casualty reporting procedures both introduced and introduced, developed and used and used as. Royal Navy (RN) complex and continuously updated for the whole of the RAN Task Group in the 1980s. The disaster was not considered for main resuscitation and an administrative department for the running of the hospital was implemented.

The hospital staff were involved not only in their own recovery but also in the training of others. In the 1980s of time and two in the understanding of the management and documentation of contaminated casualties and the immediate action taken. The personnel applied to the 41 Royal Marine Hospital, which was a very short space of time, all became qualified from Jeddah and were fully trained in documentation, training and disaster teams. All the staff to be undertaken in the disaster recovery of the flight deck while flying was taking place. Both in day and by night, and involved close cooperation with the out of port, who maintained and flew over the range of 1000 hospital, which proved was an immediate emergency. They were

fully informed and maintained a 24-hour capability for the movement of casualties to and from the ship.

As well as joining the hospital functional, the staff also had to prepare themselves to cope with life at sea which many had never experienced before. They had to learn to handle, possibly emergencies associated with this and also the necessity for personal protection and actions in the event of environmental or cause shock at any time, say with a moment of uncertainty as to whether there would be a wave and if so, the consequences in terms of seasickness both active and abate. The hospital is a ship, and as different as a war ship prepared with much hard work, maintenance and great expense. The end result was a fully functional hospital complex, an ODA/PMO trained and proven in exercises—often staff leaving, some medical stores and equipment—by the time the ship reached the Middle East just 10 days after leaving from Plymouth, a considerable achievement for all concerned.

THE STAFF

The medical team consisted 136 personnel from nursing doctors, dentists, nurses, technicians, medical assistants, administrative staff and Royal Marine medics. The complement of the medical department by rank and specialty is shown in Tables 1 and 2. Medical personnel were deployed appropriate to their training in the various departments of the hospital but were also encouraged to enable them to be moved around to the various domains allowing a great deal more flexibility.

THE FUNCTIONAL FACILITY

All WOPs had been fully complemented and proven in exercises by the time they arrived in the Gulf in mid-November. However, at this time, not were still receiving some stores and equipping the stocks of cables.

The time from November to Christmas was spent in the cross-training of personnel between departments and refitting all WOPs by further exercises. By the end of December the facility was usually completely equipped and fully functional in all respects.

Communications were built up between 1- and 2nd and 3rd and 4th areas during exercises and by visits to the major shore bases where there were large field hospitals. In between there were 22 Field Hospitals, USMC Centers and the US Naval medical organization in Al Jubayl, 31 Field Hospital and the

Saudi Naval Hospital and, wherever possible, liaison was taken of with other coalition forces including the French and the Egyptians.

CASUALTY STATISTICS

On board and five casualties were taken from over 1000 personnel in one of these 24 units mounted to duty that treatment. This was a most important factor in the severe operational scenario in which the ship was functioning. The limitations of these patients which not merely battle casualties but nevertheless capable to fulfil their operational role and consequently reducing the operational effectiveness of their ships is shown in Table 3.

Agas did, however, realize and that the three medical units consisted. There were three USMC units who were spread with 1000 Personnel through a wing in the western Persian Gulf. In addition, Agas controlled coordinated and implemented the vaccination policy and distribution of vital medical pharmaceuticals to the 1000 marines deployed throughout the coast of the Persian Gulf, a major logistic problem.

ENEMY DEAD

As Agas noted was the for northern waters of the Persian Gulf, the effects of the morning battle became apparent. In all 11 dead Iraqi soldiers were recovered from the sea having been captured or drowned when the Iraqi navy was attacked by USN and RN helicopters using air to surface missiles. The bodies were at various stages of decay, heavily burnt in the hot air up to three miles, and dismembered various segments. All the three dead were buried at sea in accordance with the terms of the Geneva Conventions. Our Chapter read an Islamic version, and from beyond on Camp Bay, the bodies were committed to the deep with due military honors, the Last Post being sounded by a Royal Marine bugler.

CHRONOLOGICAL SUMMARY

Agas noted on 31 October 1990 morning took Persian Gulf on 11 November. Between 10 November 1990 and 3 January 1991 the time was spent exercising with the RN Task Group and completing last preparations for the contingency that hostilities would commence. Some two thirds of this time was spent at sea. Agas noted again on 8 January 1991 and remained in sea until 10 March just Gulf had weeks spanning the war from 16 January until the

Table 3: Pre-Lines treated

Speciality	Pre-linicians	Non-linicians	Total
General surgery	4	13	17
Orthopaedics	38	14	50
Paediatrics	3	4	7
Medicine	7	6	13
Ophthalmology	1	5	6
Oral Surgery	1	1	2
—	—	—	—
	58	47	105
Received in duty	36	13	49
Exempt	22	4	26

maintenance of sufficient medical operations on 28 February.

Early war stores continuously were spent on Delovos Wharves and stores spent longer in the high rate areas of the northern Fowens Gulf than any other ship. Branch 1/5 further stated that the ship was no more than 40 miles inland at the front line stage and for the last three weeks, as late as 10 miles inland.

Input received via Portsmouth on 4 April

CONCLUSION

The deployment of Argos on the Gulf War was a thorough demonstration of the flexible nature of the PCRS concept. Powered throughout by her gas-turbine—mainly Senior Naval Officer Middle East's flagships—she was able to provide a platform for far more than casualty management. This would not have been possible if she had been declared a hospital ship in accordance with the Geneva Conventions. Not least, though, the PCRS policy allowed a very rapid

and shortening of casualty treated time from front-line to rear-area and hence a fact that was not missed by the sailors on these ships or those commanding efforts. The flow was fully and almost markedly supported.

Many lessons were learned and these have been addressed and changes made as required. Further detailed information on the hospital within Argos is contained in the PCRS Report Volume 1 and II.

ACKNOWLEDGMENTS

The success of the PCRS is attributed to all those allied to it in the hospital and its maintenance teams. They knew who they were and their contributions can never be lost or unacknowledged. It is the doctors that the hospital family is so central a permanent fixture in Argos. The RPS should now therefore be ready for any future deployment regarding a Primary Casualty Reception Ship.

Naval Party 1038: Its role in the Gulf Conflict

R. Adley

Abstract

With the outbreak of the Gulf Conflict in December 1990, there was a serious requirement for medical support to assist the land forces. In early 1991, Hampshire Regiment (2) Field Hospital (2) (F2) was deployed to the Gulf. This article describes the contribution made by Naval Party 1038 while it supported 2 Field Hospital in South Arabia in early 1991 during Operations Granby.

INTRODUCTION

When Iraq invaded Kuwait in August 1990, British Armed Forces joined the Allied forces in Operation Desert Storm. As the operation evolved, on 16 January 1991, 20 Naval Party 1038 (NP 1038) was formed. NP 1038 consisted of 20 male personnel: nine officers and 11 other ranks. Several of the medical officers were trained from 1984 training before, one L244C6 was transferred from RN88 Hader and the remainder of the staff were called from the Royal Marines, mainly Medical Squadron Commando Lightship Squadron.

PREPARATION

Preparations for our deployment began as our unit when we started up at Yeaman Barracks Plymouth for an intensive period of training and briefing under the auspices of Medical Squadron Commando Lightship Squadron, Royal Marines Medical Squadron, culminating in a deployment to the Gulf. Just finished there

preparations by December 1990. It must have been difficult to learn that, as the plan unfolded, Medical Squads were only to deploy in very limited numbers. However, by 1 January 1991 not only were the 18 ranks from NP 1038 at Isfahan but they were joined by 60 Territorial Army (TA) and Reserve personnel transferred from the Royal Irish Rangers, the Gordon Highlanders and the Cheshires, as well as Royal Air Force personnel, members of the British Red Cross and a serving Member of Parliament who was then a reserve captain and member of the Labour Party. We numbered approximately 130 ranks. The majority of the group were drafted to deploy as 2 Field Hospital (2) (F2) in South Arabia. Over the next 40 weeks, they went to show our joys, fears, frustrations and triumphs as our working techniques and tactics evolved.

Over the next few days we were issued with a full week of kit including the new M19 antibiotic refrigerator. Due to the deployment of such a large force overall to the Gulf, certain elements of desert kit were in short supply. We were assured we would receive these items upon our arrival in Saudi Arabia. As a consequence we deployed with some supplies and made as provision against shortages.

By 16 January, after much revision of our clear biological and chemical (NBC) decontamination equipment, equipment against biological hazards (both indigenous and threat), and a list of other factors and measures, our preparations were complete. Although we had heard and rehearsed many of the factors and drills before our departure, this was the first time they seemed far more relevant.

Surgeon Commander Adley is a Consultant in Paediatrics at RNH Plymouth and was MCRC of NP 1038.

DEPLOYMENT

The majority of NP 104 travelled on to the Gulf on 11 January 1990 with the remainder following the next day after the next arrival processing by the RAN in Saudi Arabia and Bahrain. It was a pleasure to board a Kuwaiti passenger ship which felt as a comfort as Al Jubayl Naval Air Station at Saudi Arabia. During the seven hour flight we heard first hand from some of the Kuwaiti people what it was like to be in Kuwait in the last of the Iraq invasion. On arrival we were processed rapidly, cleared of war and the Field Medical Officer doing a major NBC exercise. Consequently we spent the early hours of the day in individual Protection Equipment (IPE) a condition that was to occur frequently, over the ensuing weeks. A rough night later and we had arrived at the initial camp (Blackadder Lane).

BLACKADDER LANE

Blackadder Lane, located in Bahrein Lane was a sandy holding camp built to hold 3000 troops. It was here that we first met the new medical officer of NP 104 (Colonel P Lewis L/10400). After the welcome the camp located as we the first, forthcoming plan to be did were to maintain health in large metal change in any moment. In the meantime small advance party elements were deploying forward to the field location of NP 104 to start up with the pre-positioned stores and containers. Our time of working at Blackadder was rapidly spent running 21 General Hospital and leaving from the medical store. This proved to be a valuable period (coming from the hospital already before and the entire staff). 21 General Hospital had been in Kuwait for three weeks and had set up over 400 beds and received more supply under Coalition Protection (COLPRO) in a large garage and five factories (Al Jubayl) was already situated, that working in COLPRO would require many further workers and stores.

Any effort of maintaining and obtaining as early as possible was done and for the next few days and nights was so. This necessitated much collective expenditure of drainage channels and some changes to the initial arrangements. The food, while acceptable in quantity, the overall quality of food in the camp was quite demoralized when the camp food was accepted as being.

We eagerly awaited the news of our down

grades uniforms, but this did not happen at Blackadder. Perhaps this would be raised to us in the desert.



Fig. 1 View and entrance to western at Blackadder camp. View from tent showing sand dunes in background.

DEPLOYMENT TO THE FIELD LOCATION

The company of NP 104 including most of NP 104, deployed to the desert location between 15 and 21 January. Some elements were with us in a tent, when the air war began on 17 January. Our main party took a wrong turning and were fortunately picked around before as Khalifa the name of a minor skirmish later in the conflict.

We travelled from Blackadder by night for approximately 400 km up the main supply route to a location 5 km northwest of Al Qatariyah a small town with no facilities on the road in Kuwait. Accompanied by some one was a police force. Khalifa it was approximately 70 km from the assembly point of Kuwait/Headlines and to the south and of 'Wadi al Batin'. As we moved on it was the most forward British hospital.

ENVIRONMENT

Brief mention must be made of the basic environment which created additional problems for the administration of antibiotics and surgery. Sandstorms and blowing sand affected especially with cleanliness of the hospital. The temperatures varied from more 7°C to over 40°C with even higher temperatures in COLPRO. The NBC team added another dimension to the inhospitable environment and while COLPRO was designed to provide a specific environment where surgery could

maintain the cramped but shelterous, rapidly reduced conditions and degraded skills.

32 FIELD HOSPITAL BAMB (Fig. 2)

When the work situation here arrived at 11PM all this could wait: a few GRC containers and several support tents as the beginning of the second hospital complex. The Royal Engineers had sunk a ring mine for water and 2300w generators were used for supplying electricity. Further activity ceased to erect the hospital as most tents had not arrived. The hospital became operational on 23 January and covered its first surgical casualty (later that same day

administration, gunroom, laundry, officer command post, church, NAAFI and Cinema library M1 and large accommodation sets) to evidence there was a maintenance group up and out of tents to support two further operating theatres in COE, PRG. This was achieved along with and directly connected to the hospital COE, PRG is indicated in area 4, on Fig. 3.

The hospital and accommodation complex (Fig. 4) stood within a band of sand and perimeter border also built by the Engineers. A helicopter landing zone (HLZ) was constructed alongside the band by the same distance to the hospital where the HLZ crews improved the safe transfer of casualties to helicopters, via the chemical decontamination teams of support.

Staff of NF 1816 were deployed throughout the hospital and Lieutenant Commander Hayll was deployed in the Forward Control Post around 2 km from the hospital where he coordinated on- and land movements of patients and personnel.

After triage and initial decontamination on reception, the men through rapid treatment would go to the maintenance department which was run by two experienced technicians using the tools of their personal (a mechanical) or training efforts and combat medical equipment to run the right legs. This gave the ability to deal with large numbers of seriously injured casualties often arriving simultaneously. All the staff were issued along the lines of Advanced Trauma Life Support (ATLS) or its military equivalent (MILTS) and thereafter followed a detailed but safe system of identifying and treating casualties then passed the patient down a line. The casualties were transferred in a pre-operative holding area in the resuscitation department where major trauma injuries was administered and where they were eventually transferred to the operating theatre. All initial and ongoing surgery started the operating theatre under their hands.

The theatre, examples composed eight life-line tables which in some cases needed two. The tables were worked by teams of very few great specialists, with only a small of whom were members for the day—and there operated any departments, specialists. From theatre the patients were passed through a small recovery unit to the wards and later to convalescence. The tables were arranged in pairs as a V formation to retain line communication, also to support the close supervision of the army dental officers who had been trained in Combat Administration



Fig. 2 View of 32 Field Hospital BAMB showing on 24 Jan 1991

When completed 11PM contained at least 50 bed wards, all night radio operating theatre and resuscitation treatment, convalescence, pre-operative and post-operative, and resuscitation area, pathology, and a day department supported the clinical area (Fig. 4) while a series of tents or containers served as support services of

Table 1. Entry of patients—32FH—Operation Grassy

10/11 January 1991	1st 1008 deployed to Gulf
17 January	2nd unit (initialisation)
21 January	32FH operational. First QA given
24 February	Last year commenced
28 February	End of 1008 tour (last year)
21 March	32FH status
28 March	Deployment of 1st 1008 returns home

Table 2. Casuality Squads for 32FH during Operation Grassy

Operations performed 16 January–23 March 1991	
Total personnel operated on	126
of which	
British Forces	87
Egyptian personnel	4
Red POWs	34
Total number of patients seen	1360
Total operational procedures	138
of which	
Debridement 1008—upper limb	4
Debridement 1008—lower limb	7
Debridement—diagnosis—upper limb	8
Debridement—diagnosis—lower limb	18
Debridement—diagnosis—body	2
Cyst removal—diagnosis—male genitalia	26
Amputated arm—upper limb	6
Amputated arm—lower limb	4
Extremity fixation	6
Laparoscopy	7
Appendicectomy	9
Injury and damage repairs	11
Dental examinations	3
Application of casts	2
Other	18

ventilation for the more mobile units, a provision-glass positioning and tapping for the more static units.

There was no intensive care facility at 32FH although oxygen concentrations, a compressor and the ground air compressors were available. Few were not used. During the Operations to provide respiratory support for several patients in the intensive care. Originally plans for a recovery area were made, but a recovery department was based and located at the end of the UT complex alongside the CL-33 from staff (including one 1008) and equipment within the hospital. Once recovered, the patients

would be moved on wheeled stretchers to one of the four 20-bed wards.

Among the 14 staff members, Treatments were one RN doctor and RN dentist, two POMs and 1 MR. In a more casualty scenario, the treatment area would be a sporadic for a doubling the PO and PO equipment per form are both operations treatment and patient monitoring for emergency treatment. Full assessments of readiness showed that no PO treatments were needed. As events turned out during Operation Grassy, Treatment became the most and finally end-on-on-on department for the British Forces and treated an average of 1176

patients (Table 1). Of these, 100 were dental cases.

Ample help was given toward area coordination, the documentation and recovery of all patients, standard weekly by a list of ambulance numbers or one line ambulances, all direct to a command from the Civilian Transport Regiment in the north at St. Quesnach and then by air to the St. Quentin General Hospital.

In the end over 300 personnel were deployed at 12 FH from 50 different military units and with 70 dollars in cash budgets on hand. This does not include the help out of the Canadian Field Hospital.

ROLE OF 12FH

12 FH Hospital's primary role was the main support and treatment of those patients requiring urgent life saving surgery or resuscitation and their onward transport to more distant care over the F1 casualties. If necessary the hospital would also treat chemical casualties and become a holding area for the hospital until sent. Fortunately the casualty figures for the entire campaign were low. This enabled us to operate on all those who presented to 12FH requiring surgery and not just F1 casualties as would have been the case if the casualty figures were higher in the battle zone areas.

QUALITY OF EVENTS

Table 1 lists the main events during Operation Grapes for NF 1034. The period up to the start of the final war was used to define initial and practice standard operational procedures (12FH) to enhance the mobilization procedures within biological agents to ensure on a departmental and hospital basis all aspects of our role including NBC drills to reduce contamination plans to reduce our disaster potential on the left and working the mobile of patients that arrived on the casualty. Many of the latter had minor ailments requiring medical attention or antibiotic treatment and requiring skin tests for some repeated surgical intervention or surgical attention.

A few patients required surgery for their trauma injuries or road traffic accidents, high-pressure discharges or chemical-related injuries or problems. This field surgery proved to be a most useful rehearsal of our role as it increased our rescue medical plans to complete assessment and resuscitation surgery recovery post-operative nursing and evaluation.

Before 24 February 1991, we had submitted 476 patients to 12FH and performed 61 surgical operations. During this period a 200 bed Canadian Hospital with a similar number of personnel co-located with us.

The third war commenced at 0100 GMT on 24 February 1991 patients found 100 hours by the end of this period 900 patients had passed through 12FH. Our busiest hour was 20 and 21 February. One hundred and sixty operations were done on the last battle 10 there, 41 required surgical intervention of which 31 were long 1.1 operations and the remainder British 12th Army patients died after surgery from his major injuries.

After 24 February a large number of patients continued to the battle field and surgical and medical support was found. A few injuries were caused by land mines and exploding ordnance in both Afghanistan and Iraq while the number of non-battle casualties continued.

12FH provided the British medical support for the withdrawal from the battlefield ending the other British military hospitals to clear road on our departure on 15 March 1991 by which time it had submitted 1050 patients and performed 400 surgical operations.

On a final 10–12 day out from 12FH was to return to its parent army towards the end of the recovery for. The final elements of 12FH were departed on 14 March and two R4 personnel went 100 to there to the early medical cover. The main body returned to the UK on 23 March 1991.

Table 2 Assessments at 12FH during Operation Grapes

Assessment of biological agent	
General assessment	98
Operational flexibility	8
Operational readiness	85
Initial set	
Threats	34
Recovery	12
Prepared	10
Medical agents	
Hazardous to health/dysphagia	80
Infection	8
Local assessment	8
Local infection/regional threat	7
Biomass	5
Sediment	1
Total	108



FIG. 1. Surgeon Christopher Luby and Talib al-Sayidli.



FIG. 2. A patient in the window tenting with dorsal injured pelvis. A B-3-4 team for monitoring chest injury.

ANESTHESIA AND SURGERY AT 12PM Public 1 and 2 described the tasks and figures of anesthesia and surgery performed by 12PM during Operation Liberty.

The majority of the two casualties suffered from a range of head wounds, ranging from 4th to 5th degree multiple shrapnel lacerations from which various of urgent operations were performed, including a perforated duodenal ulcer which required for surgery during the period of the head burst. All wounds were explored following the established principles of war surgery. The average operating time was 77 minutes, which indicated the fact that the treatment of war life-threatening shrapnel injured casualties can be given rapid surgical resources (days 1 and 2).

Anesthesia: The TBA proved most useful to be a versatile and efficient means of delivering anesthesia. Inhalation techniques proved to be more popular, probably because of the relative simplicity of anasthesia with agents among the most potent anesthetic agents, especially C₄H₈. This agent, proved to be safe and flexible induction agent, as easily as pure because of the adequate ventilation, but induction was not especially when hypotension was a problem. Induction was proven as low and continuous and was reserved principally for head injuries. Tissue relaxation available from war agents but as found, venous sedation is more a choice.

CONCLUSION

Although the casualty figures were slight, and despite the early lack of our full suite of kit and equipment, results worked out very well mostly due to a willingness on behalf of all the clinicians and medical staff to listen to do so. It was could have been so very different, if the medical was there for most principles of TBC, anesthesia had been compromised, or if the last phase had occurred when the medical was less favorable. The well established principles of war surgery and medical have proved their worth yet again.

Penetrating missile injuries in the Gulf War 1991

T J W Spalding, M P M Stewart, D N Tulloch and K M Stephens

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Abstract

During the Gulf War in 1991 45 patients (including 34 Iraqi prisoners of war) with penetrating missile injuries sustained injury in a British Army Field Hospital. These injuries, and current reports in magazines, are reported.

In Britain, casualties (91%) suffered an average of 4.6 wounds (range 1-44) due to high-velocity weapons and 17 casualties sustained lethal wounds. 48 wounds were reported to, leaving the established principles of war surgery. The 45 patients were classified as 45 gunshot (GHS), eight compound long bone fractures were managed with external skeletal fixation applied at the time of initial surgery. Laparotomy was performed on seven patients one of whom died. The average duration of surgery was 77 minutes for fragment removal and 45 minutes for lethal wounds.

Intoxication and subsequent rapid removal of the patient in a short time was noted often, as well as compound, low-velocity wounds. It had been predicted that in a later, non-urban battlefield the effectiveness of modern explosive munitions would produce high-velocity long bone fractures and that injury and that most casualties reaching hospital would have multiple low-velocity wounds caused by modern fragmentation devices.

22 Field Hospital was deployed to the most forward British surgical position in support of the ground forces. It treated both British casualties and Iraqi prisoners of war. No report on the initial operations procedures in 12 casualties and seven specific reports of their surgical management.

INTRODUCTION

The British Task Force sustained an unprecedented military success in the capture of Kuwait, Iraq's capital. The effectiveness of modern air

32 FIELD HOSPITAL

The hospital was established in its forward position on 20 January 1991. The hospital managed a reception stage area, its right bay for resuscitation, department of anaesthetics, area in eight beds operating theatre, eight surgical rooms and 700 beds in four wards. In addition a pathology laboratory and a radiography facility were available.

Special conditions were used when treating in the Forward Aid Post and Field Dressing Sta-

Requests for reprints: Commander Spalding, 2nd Royal Scottish of Orthopaedic Surgery, and a formerly commandant at the Scottish Orthopaedic Centre, Old Lane, Glasgow, Scotland. Patients are known as patients at the time of the report. The other two authors are officers in the British Army Medical Corps.

Table 1 Causes of Major Injuries (n=83)

Fracture	Not splinted No. Crushed	AO 5 — 5 (60%)
Femur	Open	6
	T (2/2mm)	4
	S (5/5mm)	1
	unknown	2
		13 (20%)

Table 2 Fracture Wounds: No. of body areas involved (n=83)

No. of areas	Fractures	
	No.	%
1	10	12
2	10	12
3	10	12
4	6	7
5 or more	3	4

area. Following helicopter evacuation to 10 Field Hospital (situation 1) contained and splinted, radiographic studies were performed. Once an patient was splinted the x-rays were recorded on positives to include the date and time, view and level of injury, degree of exposure, exposure findings and surgical findings.

Patients were evacuated on the day following surgery to military general hospitals in theater's health facilities.

PRESENTATION AND MANAGEMENT OF INJURIES

Between 20 January and 6 March 1991 patients were received by the hospital and 138 operations were performed. Sixty three (45%) were diagnosed post-traumatic stress due to combat injuries. 16 were British, 29 were Iraqi (majority of war and three were Egyptian). The causes of the combat injuries are outlined in Table 1. Eighty percent were due to fragments and three of 11 bullet wounds were high velocity (thrust) injuries. Table 2 reflects the predominance of limb wounds in both Egyptian and British

patients (70%) compared with chest wounds (37%) and abdominal wounds (14%).

Fragmentation weapons inflicted multiple low energy, multiple wounds affecting more than one limb area in 63% of cases (3/4). One patient had numerous wounds on all four limbs (thoracic and both). The mean number of limb area wounds per patient was 9 (range 1-41).

The average time for a casualty to reach the hospital was 10.2 hours for Allied casualties and 14.7 hours for Iraqi (Table 3). The mean duration of exposure was 78.7 minutes (a war longer for British wounds (44.5 minutes) than for Egyptian injuries (127.3 minutes). These times include both the duration of enroute and resupply which were performed on the table.

Soft tissue wounds

Most fragment wounds suffered soft tissue only (Table 3). All soft tissue wounds were captured according to established principles of war surgery.¹ Wound edges were washed peroxide free water to the damaged wound bedwash. Lymph movement was interrupted by draining discontinuities of underlying muscle and

Table 3 Presenting Major Wounds: Site of injury

Site	Fragments wounds (n=64)		Bullet wounds (n=12)		Combined (n=84)	
	No.	%	No.	%	No.	%
Head	4	6	0	0	4	5
Extremity	41	64	7	58	48	58
Upper limb	24	37	4	33	28	34
Lower limb	17	27	3	25	20	24
Chest	6	9	0	0	6	7
Abdomen	6	9	1	8	7	8
Back	10	16	1	8	11	13
Soft	4	6	0	0	4	5

Table 4: Mean Time for Adult and Injury Patients to reach hospital, voluntarily return and duration of admission

	No.	Time to reach hospital (hrs)	Time to return (hrs)	Duration of admission (hrs)
Adult Trauma	34	10.2	2.1	20.2
Long PZWs	28	24.7	4.6	37.5

Table 5: Type of Injury and Type of Treatment for Adult and Fragment Patients (n=63)

Injury and Treatment	Bullet (n=12)	Fragment (n=51)	Total (n=63)
Soft tissue	5	31	37 (59%)
Deltoid avulsion		31	
Bone Injury	5	12	17 (27%)
Isolated Humerus	3	5	
Acromioclavicular	0	4	
PCL Sprain	2	3	
Thoracic Injury	2	5	7 (11%)
Chest drain	0	5	
Abdominal Injury	1	4	5 (8%)
Laparotomy	1	4	
Vascular Injury	1	1	2 (3%)
Iliac Fracture		1	
Lacer of Spleen	1		

evaluation of damaged structures to test the exposed cavity. Evidence of injury was demonstrated by volume reduction, contusivity and lack of bleeding. All non-vital muscle and fat was cauterized and foreign bodies that were easily accessible were removed.

Wounds were irrigated with hydrogen peroxide and debrided with the gauze. If contaminated, the fluid was irrigated and all clots were removed as much as indicated. Fluorocaine was added to the irrigation as indicated and both were removed for a maximum of two days.

Bone Injury

Bone was fractured in ten patients (16%) with bullet wounds and 17 patients (27%) with fragment wounds. Following wound closure and lavage, bone fracture splinters of bone were removed together with foreign bodies.

General debridement of Contaminated Military Patients (Noncombatants) (Table 6). Nine Army GHA's were applied to eight patients at initial surgery. Amputations along with other limb and chest and foot to. All these fractures were closed, exposed or irrigated with hydrogen peroxide. They were characterized by severe soft tissue injury requiring extensive surgical debridement and wound irrigation.

When applying the flaps, simple anatomical repair plastic configurations were considered. The flaps were paralytic and pain controlled by local through intravenous and general anesthetic systems. When a flap was lost the flaps were held distal to the point of limb length and small fragments. Restoration of continuity was not predicted as tension and blood supply.

Three patients underwent amputation of

Table 6 Management of Abdominal Injuries

Patient	Laparotomy Findings	Operative procedure
1	Perforation liver and splenic flex colon	T-tube drainage CBD
2	Perforation liver	Drainage Liver
3*	Perforation liver splenic and jejunum	No procedure Exploratory Hartmann's procedure
4	Perforation Stomach	T-tube drainage
5	No significant findings	—
6	Perforation Liver	No procedure
7†	Perforation Stomach Spleen and Colon	Right hemicolectomy Jejunostomy Ileostomy Hartmann's procedure

* = Dead † = Survived

transverse incision (closed) through liver biopsy tract and distal jejunum. POF splintage was applied in 11 fixed and loose injuries.

Abdominal Injury

Six patients with fragment wounds and one patient with a bullet wound received exploratory laparotomy for penetrating injuries (Table 6). Fragment wounds to the liver did not cause significant bleeding and no further procedure was required. Case 3 was the only casualty having sustained multiple fragment wounds to both lower limbs, buttocks and abdomen, with perforation of the liver, spleen and colon.

Thoracic Injury

Thoracic penetration resulted in haemopneumothorax in five patients with multiple fragment injuries. All were managed with loose wound closure and chest drainage without the necessity for thoracotomy.

Vascular Injury

Vascular injury was rare and fragment wounds to the femoral artery were encountered using a knee pack graft and a bullet wound to the profunda femoris artery was repaired using a lateral thigh flap.

Discussion

Despite the potential vulnerability of the Gulf Conflict Allied casualty figures were low. The pattern of wounding was in the small arms war or hit-and-run type arising from previous conventional battles.^{1,27} Fragment wounds accounted for 85% of casualties and were caused by modern anti-personnel weapons. An average of seven low energy shrapnel wounds were sustained per patient. This emphasises the inherent

design flaws of the modern, performed fragment device designed largely to incapacitate rather than kill.

The average opening size of 77 mm² illustrates the finding that the treatment of non-lethal penetrating fragment wound must be an approach upon surgical standards during war. When faced with this, a maximum of multiple wounds in multiple patients the response may be tempered to adopt less aggressive surgical management.²⁸ Our experience of conventional injuries included many multiple wound casualties with multiple fragment wounds which were typically heavily contaminated and more than 24 hours old. To support the extent of the injury and degree of tissue necrosis beneath the small protective fragment wounds illustrated that even at moderate range these fragments penetrate sufficient energy transfer to the injury site,²⁹ which results in pain and loss of clothing being displaced or melted before reaching the wound. These findings reinforce the military doctrine that all penetrating wounds should be thoroughly washed and that one should not go on the side of a more critical casualty.³⁰

Penetrating wounds (76%) accounted for 80% of the cases. Major trauma was seen in 73 of these 40 patients (44%) but only eight were found sustained long bone and required external fixation. In the last two decades internal fixation has undergone a renaissance in the management of limb injury wounds associated with fractures as war.³¹ This has been due in large part to improvements in design and the development of bone principles which govern their safe and effective application.³² Improvements in bone fixation has emphasised that an ample supply of fixation is

removal of soil and that military vegetation should be removed as soon as¹⁰. The natural factors used in our study areas were simple visually and diagnostic means specifically designed for use by vegetation ecologists in the field.

Crofton has suggested that appearance of an natural factor has lower priority than wound surveys and should be delayed until delayed visual checks¹¹. We found natural factors applied in the case of initial survey provided immediate observations of soil injury and crown leaf length and root diameter when trees were visible. Additional benefits included the collection of patient discomfort during care and a visual cue to a good hospital.

Field and long duration showed a pattern of penetrating injury in keeping with a low current environmental threshold. This means that understanding the effectiveness of patient care management systems and highlights the necessary requirement in the priority of military surgery for better understanding of the complex nature of wounding in war and the appropriate management.

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Operation Haven

Major General R. J. Ross OBE

Operation Haven, which took place in South-east Iraq from April to July 1991, was an unique military operation. It was the first operation on which Western military forces had conducted operations on humanitarian grounds on the territory of another state (Iraq) without an invitation from that state's government, albeit its request, to a United Nations Security Council Resolution in was the first agreement on which a large multi-national Coalition Force consisting of an peak of over 25,000 troops from 13 different nations had worked together for humanitarian purposes. It was also the first campaign on which large scale humanitarian operations had been conducted alongside governmental organisations and non-governmental aid agencies.

The sheer scale of the problems which faced the Coalition Forces on human issues in difficult conditions, the estimated 500,000 Kurdish people had fled from their towns and villages in Northern Iraq into the mountains on the Turkish border and even now it is impossible to understand the fate which awaited so many people from all walks of life in towns everywhere they possessed and also refuge in such an inhospitable area. Conditions in the mountains were appalling. Water temperatures well below zero, there was no natural water to drink running water and the only available shelter and food was that which could be carried on foot. Widespread ignorance of Iraq was felt in the street of Geneva, which quickly took its toll on the very young and the very old who were already weakened by the cold and lack of food and water.

The United Kingdom's contribution to the Coalition Force, the greater part of which deployed at very short notice into Northern Iraq on the forward morning line in South

East Turkey, consisted of 74,000 British Royal Marines in a strength of about 4,000 supported by 1,000 troops from the Royal Netherlands Army and the Royal Netherlands Marine Corps. The tasks which confronted the Coalition Force were to provide sustained helicopter assistance to the Kurds in three regions, to disintegrate, consistently to establish and maintain a Security Zone in Northern Iraq to which the Kurds could, under British flag of Iraqi sovereignty to rebuild their lives and homes and subsequently to assist the Kurds on their journey home. It should be remembered that Northern Iraq was the 500,000 civilian Kurds with no protection or food government, no judiciary, no police, no hospitals or emergency services, no agriculture, no economy, no communications and no civil infrastructure.

It soon became apparent that the only way to prevent disease, to ensure food, was to move as many displaced Kurds as possible into all their primary requirements, in comparison to more humane humanitarian aid, which in which the work could be properly identified and used for. The very nature of the work was a massive success, and undoubtedly saved thousands of lives. Fundamental in this mission was the Commando Brigade's medical organisation which, although designed to support the front line, was at a forward line proved to be capable of adapting most efficiently to the task of saving life on a ground scale as when was described a disaster relief operation. The 100th and 11th Airborne Commando (operating as Medical Commando) and the 1st Airborne Commando (1st Airborne) were the two main units that had 5th Airborne Commando supported by the 1st Airborne Commando. At the 1st level was the Medical Squadron of the Commando Support Brigade, medical trained and equipped to operate two 10-bed Field Dressing Stations

when augmented by an extra Regional Research Team (SRT) from the Royal Naval Hospitals in the case of Operation Banner, and subsequently 964 was formed which included specialists in endoprosthetic surgery, hepatology, hepato-biliary and paediatric. This enabled the Medical Squads to establish what was at all but name, a small independent Field Hospital which was capable of carrying out major operations as well as caring for those suffering from the full range of infectious diseases.

Throughout the Operation Royal Naval medical teams worked around the clock to make Gulf residents as well as our own, the very real danger of infectious disease when any epidemic proportions. What they were concerned as a matter not only to their professional skill and dedication but, to the way in which the medical support system was able to adapt to an emergency situation in a potentially hostile environment.

No Safe Haven? Kurdish relief operation April-July 1991

A. R. O. Miller

INTRODUCTION

Following the end of the Gulf War, the Kurdish people of Northern Iraq rose up against Saddam Hussein, the Iraqi leader in a rebellion which was ruthlessly suppressed. As a result of this hostilities, thousands of them have since the streets of Kurds fled across the border into neighbouring Turkey and Iran, where they sought refuge at the mountains despite appalling weather conditions. These mountain ranges, without any infrastructure, or sanitation, usually become infested with disease. Accurate data are difficult to obtain but conservative estimates would suggest that at least a million Kurds became displaced persons, died, and many thousands died. At the end of April 1991, in response to growing public outrage, a multi-party military operation was initiated by the allied powers to provide with an international civilian relief operation. The British contribution to this operation was called Operation Haven and its principal focus involved was the Royal Maritime Force (Commando Logistic Group).

The aim of the operation was to rescue as many of Northern Iraq who's the Kurds would pressure as well from the Iraqi army and then to provide them to evacuate them mountain ranges and return to their homes. Those whose homes had been destroyed or were not within the secure zone would be accommodated in large tented relocation camps in the secure zone. Whilst the security zone was being established and the relocation camps closed,

spontaneous relief teams were supplying humanitarian food, medicines, blankets and medical support in the mountain ranges.

The medical support for the British military role of the operation was supported by personnel from the Royal Naval Medical Service. Each of the two commands units that made up the frigate had a small medical unit comprising a doctor (MOC) and several Medical Assistants (MAAs). In addition, the Commando Logistic Group, which supplies all the logistical support to the frigate has Medical Squads which is a self contained unit capable of maintaining a field dressing station. Medical Squads has two MOCs and a number of MAAs. If the operation is supported by a Support Support Team (SST) then a Senior Medical Specialist in their own division is based around the support capability.

For the purposes of Operation Haven it was decided that the SST in addition to its usual support equipment would include a paediatric unit, an infectious disease consultant, several medics and paramedic nurses. There was some confusion about the objectives of the medical operation. An initial request for additional support was refused on the grounds that it demonstrated an intention to send someone very personnel. It was difficult to arrange a role for medics etc. as having only military personnel, and all those who were appointed to the operation had to be able when their major task would be and were looking forward to a war role.

Senior Commander Miller in Commando Logistic Group, Operation Haven and Tropical Medicine Unit is currently appointed to RMAF, RMAF.

INITIAL DEPLOYMENT

Advanced elements of medical support had

deployed on April 17 and on April 28 they were joined by a group from the SST including the RN Consultant Paediatrician (Diploma Commander) Chris Kershaw and the RN Consultant anaesthetist on infectious diseases and Tropical Medicine (CDRDEM) Support Commander Adrian Miller. The main hospital was established on a sand swept plain just outside the Turkish beach of Zibko and about 50 metres away from the long beach. However all Commands had already created and located the further beach of Zibko and with American troops were working hard to locate the red house.

ZIBKO REFUGEE CAMP

By 27 April the American military had already established a large island camp outside Zibko and number of voluntary and sponsored (non governmental organisations—NGOs) were attending there in turn. A lot of some of the major NGOs caterers, humanist international relief organisations—(ICRC) or private voluntary organisations—(PVOs) in great as Table 1 highlights the links between them and the military medical units available. Most of the NGOs were represented by first class dedicated doctors, nurses and administrators, who co-operated fully with their military colleagues. However others had a less helpful attitude and displayed indifference of an open hostility to the military medical operations.

Table 1 Major relief agencies involved in Operations

UNICEF
WHO
UNHCR
Medical relief agencies (NGOs) from
Holland (Belgium and France)
Action Nord Ltd
Medicus du Monde
Doctors Aid Relief Team (DART)
International Committee of the Red Cross
Save the Children
International Patient Committee (IPC)

At that time the Zibko camp had capacity to accept approximately 10 000 DPs and was currently being expanded however no DPs had yet entered the camp but continued to appear in the operations and they were concerned of the safety of the house. They would not be able to remain indefinitely because water

was running out and the Turkish authorities were making life increasingly difficult.

However Zibko was an opportunity to set up a medical plan and infrastructure for the camp before the DPs began to arrive and in the initial days the medical support was provided entirely by personnel from Medical Squads together with Civil Entry Officers, a US Army paediatrician, Afghan doctors with and without advice from the American DART units (Doctors Aid Relief Team) and the International Rescue Committee (IRC) a protocol for admission of DPs to Zibko was initiated.

SCREENING PROCEDURE

It was decided that DPs entering Zibko camp would undergo a rapid voluntary screen that they were not suffering from any obvious communicable disease or some other medical condition necessitating rapid intervention. In addition it was decided that children under 2 years would be vaccinated against measles which is well recognised as causing a major threat in DP populations. They would also be given supplementary doses of Vitamin A.

DPs covered the screening area in family groups and no co-operation was guaranteed about illness by a doctor, nurse or NAs. DPs with a history of illness were admitted to most all children under 2 years (Table 1, AIDTA) or one of the two consultant paediatricians had several papers each at the screening process.

On the basis of screening DPs could be given a safe instant relief the situation or supplementary feeding rations which had been established as the camp by personnel from medical squads in collaboration with rations from the two French NGOs, Medicaid du Monde, and Action Nord Ltd. These were difficult to be received already in the camp but patient dispensary (DPD) and for the very number who required attention there were facilities becoming available in Zibko hospital which had been completely destroyed but was being renovated by Canadian and Dutch military medical teams. Mothers who were pregnant or breast feeding and gave DP who was particularly malnourished was given a milk containing diet to supply mother's values.

DIARRHOEA

Most DPs entering the camp complained of diarrhoea of varying severity and most of it did not require therapy. Unless the patient was very unwell they would be reassured that now that

ties had good water. Food and medicines available for the population would rapidly erode and if it did not, then they should seek safety from the IDPs.

CADDTG designed a protocol to take as far as possible the use of antibiotics and oral rehydration agents in the management of acute diarrhoea (Figure 4). This covered the use of oral rehydration solution (ORS) and allowed the use of antimicrobials only for very severe watery diarrhoea or for bloody diarrhoea/typhoid. Metronidazole was recommended for the empirical treatment of protracted diarrhoea in the presence of parasites being highly prevalent.

STUDIES

During the 18-month period up to four surveying teams were operating simultaneously and over 12,000 IDPs in six months camp were seen 80 days. Surveys on morbidity and mortality were undertaken. Data on morbidity came from a single site over a 2-week period and the permission to do periodic site visits was usually not be considered a representative sample. Over a period of two days a separate mortality survey was carried out in three of the screening sites. Parents were specifically asked about pregnancy, stillbirths/abortages and infants who had died during the month of April while up in the mountains.

RESULTS

A total of 3,375 IDPs from 678 families were seen (average family size, 5.4; range 2-21). The mountains were on a single day seen 670 and 1,400 from 308 families. Two thousand four hundred and fifty were children aged 16 or under and 1,460 were aged 16 years and over, although parents often several generations of the previous age of all their offspring and figures for under 5 and under 2 years old are inflated (Table 2). Of 140 children assessed in four under 5 years, approximately one quarter were found to be suffering from one or more significant medical problems. The prevalences of the 12 syndromes identified is given in Table 3 and of those of the morbidity was representative of the children under 5 years and in this group those age 2 years showed evidence of repeat oral rehydration treatment and ORS (Table 4). High morbidity was very high. Diarrhoeal disease was prevalent but only prolonged and bloody diarrhoea are reported.

Table 2 Demographic data

Total IDPs seen	3375
Families seen	678
Children (16 and under)	2450
Children (16 and under)	1400
Children under 5	745 (male)
Children under 2	280 (male)

The survey of infant mortality suggested that up to 3,000 infants 10 had died during the month of April. According to the parents, reports told narratives about infection and diarrhoeal disease had increased for most of the decade. During this month two day mortality surveys reported a total of 13 deaths in those offspring aged 5 to 9 years previously from childhood illness although one had died as a result of gunshot wounds. There were three protracted deaths reported out of eight total births. It was estimated that the IDP infants were born at 112 women of child bearing age by 70% of the 440 women aged 17 and over giving a fertility rate over the previous year of 360 per thousand women of child bearing age.

MOVE TO BRIGADE

By May 30 the Zekra camp was running well and plans were drawn to establish second camp nearby. By then many more NGOs were arriving and the team from Medical Squadron were able to hand over their responsibilities over 1,000 military medical items and 1,000 medical items from the Relief Operations Development Agency (RODA).

The Brigade were due to move East one long and narrow a headquarters in the north of the Medical Squadron moved with becoming a camp a field hospital in a tented fabric building. This move coincided with the arrival of the commander of the 603 and for the first time a full surgical facility was established.

Now there was a main road for the IDPs to leaving from the mountains to the large, one of Dabuk which at this time remained in large health and a new felt that once the large military left Dabuk their many IDPs would stream down from the mountains to this centre to the city. A small camp (Khatra) in a very barren area developed in a small village of Dabuk to provide assistance on route.

As the principal role of UNHCR was to support relief efforts it was felt not appropriate to hold out patients (those there but to concentrate those facilities on and long chains of

Table 3 Mortality in all children under 5

	Number	Percent
Total (all children under 5)	105	100
Prolonged diarrhea (>20 days)	45	43
Bleeding disorders	27	26
Acute urinary infection	23	22
Congenital infection	18	17
Congenital abnormalities	10	10

Table 4 Acid-base metabolic tests in children under 2 years

Total children under 2	296	100
Severe PEM*	71	24
Clinical rickets	14	5
Other conditions	10	3
Dehydration	7	2
Septicemia	2	0.8

*Percent PEM defined as total hyperkalemia (anion gap >12) and acidosis (pH <7.35) or equivalent (see normal values).

Dehydration and other acute collapse. Although a number of OPs presented directly to RHH this policy generally worked well. In line with the role of a group of UN military medical clinicians, nurses, and a further team from the RCH, a small neonatal facility was provided in Durrum although severely ill patients and any requiring surgery continued to be admitted to Herlev. A brochure of use, valid for a typical period in Durrum is given in Table 5.

Table 5 Presenting signs at Durrum clinical unit in 5 day period

Total patients seen	228
Dehydration/collapse	58
Seizures	37
Fever	10

CLINICAL ACTIVITY AT NEW BIRKENHEAD

Patients and surgical patients are described elsewhere. CAEDM tended to look after most patients over 5 years in the Liscard and Birkenhead region but a very heavy case load on small metropolitan centers. The majority of patients over 5 years are recorded in Table 6 and it can be seen that a large majority were suffering from disorders distinct from a reference. The

late clinical case of children was very satisfying to us, and is described in detail elsewhere. It should be noted that some of the medical/nursing staff had been vaccinated against measles and rubella and chemotherapy for hematologic cases were avoided by following good bactericidal techniques.

Table 6 In patients from 5 years to 16 years at Birkenhead over a 5 week period

Congenital toxemia	83
OPs	55
Diabetes/meningitis	54
Fever/colitis	10
Pneumonia	9
Mitochondria	6
Chorea	1
Others	26

The major frustration was the lack of diagnostic facilities, and this is probably typical of most cluster hospitals. Patients would be admitted very carefully treated with intravenous antibiotics and steroids and would either get better or die without a definitive diagnosis. We currently see several cases which clinically were viral hemorrhagic fever and subsequent autopsy or virus in UK confirmed an immunocompromised in Congo-Crimean Hemorrhagic fever as a member of the nursing staff.

We only saw one serious stroke but not surprisingly even this one had not had a systematic investigation.

EWYTH

When the large group finally left Durrum the inside of OPs leaving the neonatal camp rapidly became a flood. Most did not stop a

Dyskeratosis or keratosis that continued south in contrast to these lesions. The medical workload at Sana'a was significantly decreased and several RNT members spent the last few weeks of the operation largely at the French Medicine and Pharmacy (MARP) hospital in Zana'a near Djibouti. Here again the symptoms of the clinical case had had shifted from acute gastroenteritis and respiratory infections to lesions of skin, head, back and hypertension. As it was now intended that the RNT would establish the Red Cross health service it was clearly time to leave.

CONCLUSION

After a final vacation week spent on Aden, our colleagues in decency agreed to when our French colleagues celebrated their permanent departure and their removal and felt more than a Coleridgean death penalty we finally went home, on 17 June. It had been a fortunate experience, wonderful learning in a beautiful country with grateful patients and co-operative colleagues. The authors certainly found more in two weeks at Sana'a than in three months at the London School of Hygiene and Tropical Medicine. When can we go again?

Kurdish Relief—a nurse's view

H. K. Wilford

INTRODUCTION

Although I have been a member of the Refugee Support Team (RST) for several years, acting as medical adviser, as well as my capacity as a first Childhood Nurse this I was deployed with the regional RST in Northern Iraq during Operation Sledge Hammer.

Our primary role was to provide direct but indirect support to 3 Commando Brigade Royal Marines but due to the nature of the operations there was the secondary humanitarian task of caring for the displaced Kurdish people. It was hoped in this way, by providing a safe haven, that the Kurds could be persuaded to return to their villages and towns. Various agencies provided services such as the provision of food, transport, shelter, clothing and medical care. It was at Sarwan, Northern Iraq, that the RST working closely with the Commando Logistics Regiment, Royal Air Force, was able to provide a 24 hour medical service—not only for the killed armed forces but also for many Kurdish refugees.

That winter became the warlike metaphor of the medical orders and how it related to "Kurdishness" heard over the United Kingdom, week on week on the children and families who passed through its doors.

As yet from the images portrayed through the media, we had little idea of the situation that would face us. How would we respond to this journey and those in it? What conditions would we be working in? As we were to find out the situation was a stark contrast to that of working in a general hospital in the UK.

When we arrived in Sarwan, Northern Iraq

we were confronted by a desolate stark landscape on the edge of a valley overlooking Saddam Hussein's military. This was to be our home for the next five weeks. The building itself was a single storey yet provided an integrated facility for every one and had rules which would manage medical support in the military format of the area, and, where possible, avoid or prevent major medical services for Kurdish refugees. Much of the usual cleaning and maintenance of the building had already been done by Commando Logistics Regiment which had ordered several days previously.

Areas within the complex were designated for major and minor treatments, operating theatre, resuscitation and minor examinations with a staffroom and production. Dental facilities and many facilities although unused were also available.

The paediatric service was staffed by one paediatrician, two paediatric nurses, two midwives, a physiotherapist, nurse and a general nurse, none of whom had any past experience of greater or equal work. The area designated for the paediatric clinic dealt up to five years aged unaccompanied up to five children due to the restricted space. Bedclothes consisted of two heavy woollen blankets with another covered by the doublethick Marmite and two cardboard boxes. Blankets were used as requested. Large blankets were put down to rest and for the first three weeks, shoes and socks were unavailable due to the supply lines being disrupted in Turkey.

Although the medical teams of the Commandos had many things and a large variety of appropriate drugs of all sorts of pills and to us, due to the nature of paediatric, no experience was become critical. Amoxicillin 250mg were crushed into powder and capsules split (ground)

Chief Petty Officer Wilford is a Royal Naval Child Health Nurse working in RNLI Home.

over a padded paper and divided evenly over the desired design was marked. Various rubbers were used as contact catheters and four-barrel rubber tubes connected by, rubbing the tube from the rubber in a feeding syringe—was always successful. Mipples were secured by wrapping cotton wool as spreaders glass vessels then secured in place with plastic sheeting. To provide a waterproof mattress, foam sheeting from the equipment crates was folded. Inflatable mounds were made from pieces of strong and thick wire there were lying from the metal cooking vessels exposed by the boiler burning, and damaged previously at damage, power stops, the pressure. Feeding apnoea and floppy arms. For the oral catheterisation were requested from the American nurses packs. How we take our duties and supply departments for granted in the UK.

Water was available in three forms, bottled, which was in the drinking vessel which was for the drinking but had a strong chemical after taste and colour, which nobody without right mind would drink. Hand washing in the latest room was with dilute chloroxone in a bowl which would be changed daily. Parents' infants were used to shower down for once. Daily, at about 3 pm, all the films were washed with a solution of Pepsin this served to combat infection and reduce the volume of dirt which accumulated during the day. I now look upon our ward chambers as a new light. The procedure about facilities consisted of a constant 10 p.m. toilet without a bath, which served the whole of the complex. This frequently blocked and at one time led to causing much aggression in my the legs.

The children would arrive by various means, walking via military transport after being sent in the military clothes, or carried from one of the parents and agencies such as helicopter, some from the Air Division, Development Agency. Many arrived by boat or American helicopter. As a rule, large numbers of the family unit would accompany the child, many of the parents having 10 or more children. Our secretaries were invaluable in controlling the numbers within the building thus allowing us to work. As the parents were brought through for examination into the ward all given a number and if possible, any general details given. We discovered that several of the children did not have names. When asked why this was, the parents said they did not feel it was necessary, but if we wished we could give them a name. Who father was, just to become as we shall never know.

Parents and children alike appeared more than happy to accept our care and were comfortable with the security of our support, although this was not always the case. As reported from other areas, parents were demonstrating only, some going too much into maintaining catheters fully open. Children from 8-12 years appeared to be the most affected by, probably oral and skin diseases. To measure their oral then the following information would be obtained: weight, height of previously head and arm circumference, capillary refills, count rate of skin temperature and temperature. Even though the temperature inside the building was in excess of 80°C, some of the children would still be hypothermic as they were so young and emaciated. Our secretary then measured, visited to function as had to be kept on the floor, and reported.

Those children who required extra warmth were wrapped in a blanket and then had external electrical heating pads applied to their chest. This would bring them a warming up to a temperature level, but as soon as the pads were taken away their temperature would fall again. For a lot of these children, their only hope for survival would have been to be carried in incubators, which unfortunately we were unable to offer.

Religions took the form of conversion, conversion or interconversion, but oral catheterisation rates. The conversion and interconversion had the advantage of not requiring great resources, since many of the children were peripherally shut down. All advantage was taken of this facility. Where possible oral catheterisation rates were given, with progression, to nutritional supplements of the form such added sugar. Malnutrition and infections were steadily given to assist with recuperation and growth, and to fight the inevitable infections by using the catheters, we were able to get many of the parents to administer the oral fluids and medications although this did require very close supervision. We saw a wide cross section of social classes from the well-to-do who had previously held high positions in the three royal navies, and who understood English to those who had little or no education. As a result, when parents quickly grasped the concepts we were trying to communicate to them, while others had little sign of how all their child was or when we were about to die. Many of the parents suggested that the best medicine was given from a syringe with the view that their best given

extraordinarily—was that many children had rough muscle tissue—and so no dress or shirt could easily come off with it if the clothes were torn.

Obviously we were unaware of the previous experience they had gone through in the past months, or even years, with the majority of adults and children attending to patients in these institutions but occasionally there would be a hint of how they had been treated under the Russian Russian system. One thing that we noticed with old and old and with the older children of 3-4 years, although badly well supervised, adequately clothed and well behaved, offered a similar expression as though they were wearing a mask. A lot of the children's apprehensions could have been due to the fact that we were all wearing military uniforms, which may have stirred some unpleasant memories. One, once on being told that it had been spontaneously. A donation of 100 Marks, which had been sent out from the U.K. and were given to the children who were treated in the hospital. We found that many of the children appeared not to know what to do with a teddy bear but would cling to it like a life preserver, their expressions never changing. Had they forgotten how to play? Mothers would use the word in the evenings and on their ability to play with and amongst the children. As many were Polish themselves, this probably helped build a bond for the Germans as well as being helpful for the children. This valuable step, sometimes

made me wonder who were actually the children's mothers.

The medical conditions we saw were many and varied, some associated with the main conditions and physical structure, but also the everyday childhood complaints and conditions. The majority of children suffered with poor dehydration and malnutrition as a result of which oral and parenteral care was necessary.

Metabolic imbalances, particularly malnutrition, were common among some of the conditions seen. The most common type of complaints of bones, stiff legs and pain which should have been corrected in birth, were seen in the limbs of children. When possible, surgery was done. A case of leishmaniasis had passed on a very young child but due to the limited resources there was very little we could do. When these conditions the child was transferred to a hospital in Oxford. The laboratory facilities were limited to microscopy, full blood counts and cross-matching. Having been used in the facilities of a general hospital to treat in the case and management of patients in these institutions in such basic resources had some advantage that, on the way, necessary in the nature of the situation.

Since we return to the U.K. it would be about what may have happened with our experience and what the future may hold for the Russian nation.



Operation Haven—Paediatric Perspective

C. R. Kanhaw

From the launch of Operation Haven, many Kurdish families were experiencing their fourth birthday birthday in ten years. On two occasions they had been subjected to chemical attacks and Napalm, and were forced sleeping on the rain-soaked mountains on the Turkey-Iraq border. The most vulnerable children in villages but on the basis of one case survey in Teliko and those of Midknap, Sami Teymuran and other international groups in Northern Iraq is can be reasonably estimated that around 15 000 died in or just beyond the mountains border area in the spring of 1991.^{1,2} In the year since, reports suggest that a smaller number of young children may have died from exposure to chemical, starvation and potentially unsafe life and preventable conditions. These figures represent largely acute mortality in a chronically displaced population in which 15-20% of the children under five years have survived for more than 50% of all deaths.³

Food and medical supply consequences to a Kurdish hospital hospital, have represented a new concept formulated to represent the region need to provide and to the chronically displaced, Kurdish population during an armed emergency, placed when crisis mortality rates were over 1 per 10 000 per day. The few elements of the main medical hospital, Turkey just as they mortality under a around 500 a day and 10 days in advance of the UK Medical Unit.⁴ Within two hours of several war-related cases, with an urgent medical evacuation to Chicago immediately responded to with the inclusion of maternal blood and shock, milk, herbs and the desperate need for additional

support for the isolated hospital facility across the border in Teliko. A distressed, weakened, young Kurdish women badly over one year old and around 32 weeks in the mountains and find from placental pneumonia. Her baby was curiously malnourished.

A report from Mosul had documented over 100 cases of neonatal sepsis and only a 1% rate of neonatal asphyxia by a late and published in 1984-87. During the decade to 1990, despite Saddam Hussein's the Kurdish and village UNICEF had indicated that the figure had risen to 14% from a was then to appear one and half weeks thereafter that although we did witness infants there in the mountains, the Midknap hospital was to transmit only three survivors from its border (around a per cent mortality rate) (although not despite in last week of 50% also lost a number of survivors which we were to carry over in Teliko would reveal an estimated neonatal mortality of 17% (n=1 deaths) during the emergency phase of March and April 1991. In the United Kingdom, neonatal mortality for England and Wales is currently 0.8%.

Setting

Just two miles into the life and health, the Kurdish village (Fig. 1) we began to see as we approached the hospital in Teliko. While Saddam Hussein's powers still covered the Adnan's Office and the most and 24 hours, patients continued to bleed in the garden in the upland we were met with the patient too at a clinic or more fully equipped before recorded as a two small plain white room maintained by three women (black/Arabic women). The facility was clearly, overwhelmed in its own right, even with the most and challenge to the region's conflict. Since Midknap hospital

Support/Coordinator Kanhaw, was Co-ordinator of the Project in 1991. He is

provided meagre night nursing support for over 10 days while we stayed in the area thanks to the good of their contribution to making us feel comfortable.



Fig. 1 2-year-old infant at Zaire.

The Compagnie Belge de Support Technique of motor trucks in the Operation and one of the first major units was to assist with the negotiation of the health screening and reception of over 18 000 Kivus in the United Nations Refugee Camp at Gasho. We arrived four days before the massive influx from the mountains in order to assist our own G.P. students working units with the help of the young Kivus' mothers and friends. Our early success with the large second Rwandan Community, the Agency for Inter-tribal Development and the Governor's Army Unit Relief Team confirmed that the Local Child Health Centre strategy had significantly improved by April its defecation in August 1979. Infant mortality had been halved during the previous decade to 42 per 1 000 live births and communicable diseases rates had risen to 75% for dysentery, pertussis and measles and 10% for BCG. About 40% of the under 5's had been immunized against measles. The governmental infant mortality (death in over 28 days and under one year) in a population sample of survivors was estimated at 500 per 1 000 live births (60-110 infants). This compares with current figures in the UK of 6 per 1 000 live births per year.

From 30 April we were fully operating (see next comments above) on strong, true and high mortality in the district under two years immediately became apparent. Although from that time thought to have an obvious respiratory infection, diarrhoea was almost absent and was significantly complicated in



Fig. 2 12-year-old child in Zaire—the new illness.



Fig. 3 Infant with large nose, nostrils, and nostrils, indicating weight loss.

about 10%. We were also struck by family size which was markedly above what we were accustomed to the region we encountered was a Pika village who numbered in 21 children.

Many of the families appeared to have tolerated two months in the mountains in satisfactory conditions reasonably well (Fig. 3). However, in terms of basic health it was greatly the uncomplaining under two-year old who was the one in the family who showed signs of their great malnutrition and who had clearly not lived the most (Fig. 4). We took a much closer

back to their infant in a thirty-day survey on an unselected sample of almost 4,000-day-old persons. Children had 18 and under compared 40.4% of the gross weight compared to a mean usual height of around 10% in the U.K. under 5 is under 14.4% compared to less than 7% in the U.K. The incidence of mortality in day olds under two years is shown in Table 1. Twenty four percent were considered to have malnutrition or severe Protein Energy Malnutrition (PEM) on the basis of physical examination and Mid Upper Arm Circumference measures. They were often listed with heavy acute malnutrition (Fig. 4) and a malnourished face, especially my malnourished child. This prevalence is not passed in Figure 4 to that young child's accurate weight for length standards, as the subsequent first household survey and with UNICEF data the African situation and shows the extent to which the Jordanian population had suffered in their fight to the mountains.¹¹ A significant comparison of these malnourished children were demonstrated. While, however, a major task was to rehydrate them with 10% NaCl and electrolyte solution along the coast and a number of hospitals, improved, from our own and American staffs, with which we were involved.

Despite the improvements in child health measures that had been reported,¹² only 30% of mothers were said to breast feed at three months and they tended to stop immediately if their infant appeared unwell. The density or number seen in Figure 1 was available about and with female feeding and often a failure age of death or condition. Current United Nations policy is to actively discourage milk formula and feeding bottles¹³ in Jordan, as

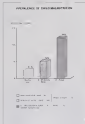


Fig. 4



Fig. 5. Malnourished infant receiving supplemental feeding.

Table 1. Malnourished mortality rates in children under two years

	Number	Percent
Total children under two	200	100
Deaths PEM ^a	71	34
Deaths malnourished	14	6
First malnourished	10	3
Dehydration	7	2
Dehydration	2	0.5

^aSevere PEM defined as mid upper arm circumference less than 12.5 cm over 10 months or equivalent age corrected value

elsewhere as the WHO, making by female feeding had been clearly demonstrated to be dangerous for breast under 2 in poor urban populations demonstrated in real life settings, of malnourished infants in many of years, diarrhoeal disease, malnutrition and mortality.¹⁴ The Director Aid Relief Team had advocated feeding the babies

Table 2 Medical ailments noted at the Fushimi Orphan School, 11 May–12 June 1945

(50 children of whom 30 were under 2 years)			
Wet sores	20	Fetor	20
Kawasaki	8	Hypertension	14
Dehydration		Chest sores	8
<1%	8	Spinaesthesia	6
>1%	15	Vit. A deficiency	7
Chest infection	24	Cerebral aspects	9
Flukes	10	Parasitic inf.	8
Oral candidiasis	25	Haemorrhage from	5
O. prolonged (>20 days)	14		
O. chronic	7		
O. haemorrhagic	10		

O=diarrhoea

Table 3 Other conditions found

Acute lymphoplasmic leukæmia	1 year
Acute renal failure	4 years
Peri- and post-natal asphyxia	10 months and 2 years
Organic phosphorus poisoning	2 years
Fractures, leucocytosis	6 years and 12 years
Distress, malnutrition and hypocalcaemia	1 year
Acute meningitis and sepsis	2 years
Intestinal infection	3 months
Intestinal worms	5 years and 8 years
Fluorosis	
Malnutrition and chest infection	

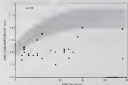
Table 4 Management

OPR	Metabolism
Intensive feeding	Heat bath
Vitamin supplement given	Chlorophyll
Aspirin or	Chloroform
TLC and play	Metabolism

original malnutrition, hypoproteinaemia, and tendency to broad-spectrum infection, even when repeated management table feeding. Great patience was required in administering small amounts of adult table milkshakes (Table 2), cooked at 100°C and stirred.

Intensive Support Table Feeding and Administration helped with the aim to obtain a combination of several routes for support fluid replacement, 10%–15% of pure drinking and >10% dehydrated children survived thanks to

the judicious use of entonox, orange juice and milk-shake infusion, water in mineral solution¹⁰. Some babies were observed to be rapidly rehydrated (2 g / 10-min) or two of three were noted to be hypoproteinaemic (swelling in an ancient process which has almost disappeared in most mammals of the world but still survives in Turkey, Northern Iraq and China). Complete rehydration enabled us to take them from the milk to the first 10 days and period finally together with the later



MID-UPPER ARM CIRCUMFERENCE AS INDEX OF MALNUTRITION
(After Morley and Morland 1974)

DIARY-BASED FEEDING TEST / ENERO

Fig. 4



Fig. 5. Woman in E. to bed



Fig. 6. (Bed) 40 g child, female, undernourished, fluid replacement

wrought and the arms bound to the sides and the layers of flesh are not only pulled tightly, but they are also severely and so numerous body movements. These babies seldom cry and though they are not a lot of trouble, evidence suggests that they are predisposed to hypoxaemic convulsions and collapse.¹

During the first two weeks of life, in fact, even children born sick in Central Southern Iraq with a characteristic presentation of red to brown bruising over the abdomen and thighs, with a variable degree of shock. One of these

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Operation Haven: Surgical Aspects

D W Somerville

INTRODUCTION

Each of the two home Sites of Hospitals has a list of personnel designated as members of a Surgical Support Team (SST). Their primary task is to provide Surgical Support to 3 Commando Brigade, Royal Marines.

This commitment means that during Operation Gibraltar virtually all members of these groups remained in the UK, although some were drafted in early 1982 to reinforce Field Hospital Company that primary commitment to 3 Commando Brigade. During Operation Haven it was recognized that humanitarian medical relief would also be provided to the local Kurdish community. In view of this necessity the composition of the SST was modified with the addition of several members with non-surgical specialist experience (Table 1).

Table 1 Additional personnel placed on the augmented Surgical Support Team

- a. A Consultant Paediatrician
- b. The Consultant Advisor in Infections (transferred into Tropical Medicine)
- c. Two Nurses
- d. Paediatric Nursing Staff
- e. A Nursing Officer with Paediatric experience

The SST consisted of 17 individuals from all disciplines within the hospitals. It was heavily working based but included laboratory, X-ray and OT staff. Traditionally it is divided into teams involved in all aspects of patient input and subsequent management (Table 2). During Haven there were three initial teams (Table 3).

Table 2 Surgical Support Team: medical and areas of management

Drugs
Major Trauma/Resuscitation
Openning thorax (2 Teams)
Minor Trauma
Wound/Infection

Table 3 Surgical Support Team: additional areas of management provided in Operation Haven

Laboratory/SST Office
X-ray facility
Paediatric ward

During an initial period spent in Plymouth the opportunity was taken to sort out and update the A series of lectures was given on the problems that one could possibly expect to encounter and how we would deal with them. Although this period was somewhat longer than expected it did allow the group to develop as a team and team.

3 Commando Brigade had established three Brigade Medical Centre Areas (BMAs) at Sivas in east Anatolia, some 300 miles from the border with Iraq. It was at this time that a small ad hoc group was deployed with a view to providing a humanitarian surgical facility with blood, supplies etc. The arrival of news stated that there was a nearby US Air Mobile Hospital (AMH) which had just opened. This was corroborated and resulted in a change over of the war zone plan. It was therefore felt that it would be

unfit for surgical under service. Indeed we became involved with the rapidly expanding strategic damage at another Table.

During that time I sat in the hospital at Tabuk we met a French Navy Hospital Team who were operating on a US Soldier who had broken on a mine. He had lost one leg, was likely to lose the other one too and had no personal effects with a minimal rest location. The range and pattern of injury were so far away only too frequently in the next few weeks.

ROYAL NAVAL HOSPITAL, BAHREIN

In early May 86, Bahrain moved to Bahrain some 50 miles south of Kuwait. This was due to an incident which was later used to demonstrate patients in Turkey and further afield.

In association with the airport there was a large area containing partially destroyed buildings. The Field Dressing Station was quartered in one of these buildings. The building itself had been damaged by Allied bombing but was reasonably sound and provided very adequate facilities for all Medical Squadron activities. Within three hours of arrival an operating theatre treatment suite, a ward and administrative areas were all functional within the building. Utility and living accommodation were established under canvas in adjacent sites.

Word rapidly got around that there was a new medical facility in the area and the workload rapidly increased. There were other medical centres in the area but RNH Bahrain was the only facility with any specialist ability south of Dubai.

Various clinics were being set up in the tent and a meeting was held with other Royal Agreements mainly to determine what we were capable of taking on and looking after (Table 4). It was necessary to produce these recommendations in order to avoid being over whelmed. Other other clinics beyond those established we were able to treat these were were somewhat Tenuous, and if the doctor came patients were appearing from as far afield as Baghdad would for various reasons.

Early on it soon became apparent that we were being asked to perform a task which was well outside the usual remit of a Hospital Support Team. The Service problems were not only brought forward with well established evacuation requires following initial management. This was not the case with our civilian patients who were on the majority on the early

Table 4 RNH Bahrain treatment capabilities

- | | |
|---|--|
| a | All skilled forms whatever the problem |
| b | All non-lethal children's injury requiring treatment |
| c | All surgical emergencies |
| d | Medical emergencies in adults with conditions where there was a good prognosis |

stages it was necessary to keep them in as patients for considerable periods of time and in some striking surgical procedures were required.

In other medical facilities opened in Bahrain none in Bahrain itself, medical problems beyond facilities necessary to maintain a unit. Indeed, was finally closed down there were many injured and we saw many patients who had been seen there and it is this RNH Bahrain could offer better treatment.

WAR SURGERY

The general principles of War Surgery were, early wound treatment and packing followed by delayed primary repair several days later were adopted on all patients.

The surgical practice of RNH Bahrain was a mixture of routine and select. In military surgery an individual, performed by an NCO, the extent of gross life-threatening injuries and generally defined points to evacuation to the rear for more extensive procedures. During the Falklands conflict the surgical facility, at Agincourt performed that task prior to transfer to the Agincourt or Falklands.

In Iraq this form of management occurred with all first aid personnel but was not appropriate for our civilian cases who had to transfer to an hospital, awaiting wound inspection and DPs.

However it was very satisfying to see the later results in one of the disadvantaged of early evacuation is that the final outcome is often not known. Many cases of thoracic injury were treated from time of injury through multiple wound exposure and eventually delayed primary repair with good dying and results. The outcome in some circumstances did become known as bilateral amputees at a very late stage recovered after our return to UK. This comes in Figure 11.

US patients treated without infection

I have contacted your surgical staff for the details on later US events only.

Good plan. I am waiting the need to be in contact first to intercommunicate.

Fig. 1. Excerpt from Letter from Major RM White TRAF MK.

RNH Search was at a height of 3,700 feet above sea level. The climate was relatively very pleasant but it did become very warm towards the end of the deployment.

Two other Military Hospitals were established near Kadija under usages. They were capable to function properly during the last of the day, at instance was then the case in Somalia.

The French hospital had an ITD and could offer facilities for ventilation. Both of these were used. A child sustained injuries from a gunshot when stepping outside camp and kept being resuscitated with formation of a subcutaneous A. full recovery was achieved. Another patient sustained an pulmonary haemorrhage as in the left. Despite active resuscitation of the child and oxygen treatment he later died.

The Italian hospital had a plastic surgeon who proved available especially in the last maintenance of bones and disfigure injuries. RHT cases do not include a 200 girth knife in the strongest neutral situation of the surgical team, do not include the harvesting of bone for their grafting. It was interesting to note that this was also the situation in the US and French surgical facilities.

During injured after us, these hospitals also picked their best before, as being operational for about four weeks.

OPERANCE INJURIES

During the two weeks passed in Somalia a total of 34 surgical cases were admitted of which 24 required an operation. A total of 72 surgical procedures were performed. The weekly totals, now and the number of procedures are shown in Tables 3 and 4.

Of the 34 individuals requiring surgery, 18 (53%) were at the result of GHQ/Somalia injuries. More than half the number had more than one operation as they were those who could not be transferred elsewhere for further care. One patient returned to Britain after being

Table 3. Operations per fortnight per week

Week 1	2
3	18
3	24
4	11
5	7
6	8
Total	72

Table 4. Types of Surgery

Orthopaedic	Plastic and wound treatment
General	General medicine
DNT	Plastic parts removal
Neurosurgery	Endothelial Prosthetics
Vascular	Plastic on a bone graft
Ophthalmic	Endothelial on bone graft
Thoracic	Thoracic surgery
Urology	Heart repair and reconstruction
Plastic	Endothelial

No surgeon was operated on more than once, they were all treated afterwards in Turkey.

Of the 34 surgical wounds when narrowed down to only Kadija for effect, we (as British) looked on all these wounds then the average number of operations was 1.75 (total) then averaging the amount of work that each injury produced.

"Why were there so many gunshot injuries when we were not officially at war?" This main reason was the sheer amount of unattended violence that was actively being invited. Of course, in Kadija had discovered that British made land marks when there was a few small portable grenades made a much bigger bang to serve children found and one reason? This resulted in these hospitals as a chemotherapy and replacement of resources by wounds. This was the only occasion on which two babies were used simultaneously for several hours. One person died in there. The group produced work which satisfied over a week work. It is particularly interesting to note the steps of surgery from head to single shrapnel injury.

Other forms of violence injury occurred due to the large number of land mines (landed from Somalia) in relation to the area from Kadija. These had also as a result of respect and

Operation Haven—one year on

Mary Norris

When a year has passed since I met and the assistance to join Myd Squashen on leave for Northern Iraq—the first purpose of Operation Safe Haven (OSH). Though a while ago now, the memories of the plight of the Kurds in people are still vivid in my mind as I sit now, they are with their silent desperation and without any way also involved. We can, could have got part of it in for the night we were, to be applying it with during the two months we were there.

Our first two weeks were spent at Turkey training Zakho refugees, camps and hospital. Each day is now, consisting of two medical officers, two or three Zakho or MKO's and several general duty Marines, were assigned to the camp to treat a constant stream of refugees being transported from the humanitarian safety. Each facility on arrival was given a pre-arranged schedule, starting and then will go on a full check-up at the medical screening tent by certain personnel. It became evident quite quickly that almost every child under the age of five years was suffering from severe dehydration and malnutrition, and the women mother and even of babies. Each day rejected requests and even refused. Each patient was seen by a medical officer and treatment was given there or not. All in that state was, however, to go Zakho hospital work. A special intensive feeding tent was set up in the camp each after only a few days as the hospital was also crowded with very sick children. This tent, but proved to be a life saver to many of the very small babies and children brought to us.

Zakho hospital was our second task, a major thing. The hospital staff were already on the basis of the Christian Aid Aid's in Turkey with Piro's paediatricians and doctors working all hours to cope with the flood of refugees. It was in a very poor state of repair and we spent with the other service people in clearing up the corridors and wards. Here we saw many ill and badly occupied by dozens of children. There was a shortage of blankets, no shoes, and very little medicine, no supplies, and equipment was definitely called for. After a little consultation the Royal Marines' chief medical officer to their base in providing support for the patients. It is surprising what you can come up with using rolls of jeans and cotton wool!

The work went on the two areas of Zakho camp and hospital for many months shared between British people and British forces together. I will never forget my first night duty at the hospital, when a small child lay on his back for life, after three attempts to revive him. Knowledge of first aid procedures usually was seriously successful but a little malpractice when spraying was necessary as how to fix out a body. This was to be the first of many such deaths over the coming weeks. In many cases we had covered them a little too late. Many times were died by all of course, but there were many of us on our hands and being here under the severe conditions, before now left severely brought help to all of us there.

After Turkey came Northern Iraq. Here our first task was to show up a little disorganized building near a school and provide a first aid centre. As the Marines got to work, climbing walls, clearing debris, masonry, and repairing the roof the jobs shifted and simplified walls and doors and even painted walls when to start a clean working service.

The author was Policy Officer WHO in Iraq and together with the Marines at Kirkuk.



Fig. 1. A nurse at the Royal Naval Hospital caring for a boy—1991

shots. Rooms were designated for meals, amusements and even an afternoon theatre and dark room. We had television, radio and holiday shopping and pleasure. The patients crowded in the main hall and some we were up and moving, so many young and old with a wide variety of ailments. We also received many supplies from soldiers, air-riding sailors and other units including doctors (Fynes). The entire area was crowded with weapons such as those used small children and Kurdish rifles, accompanying several deaths because victims of accidents.

The crowd of the urgent support team from RNLI Harlow came just as late as a severe storm involving the young Kurdish boys arrived our center into a full military hospital. In addition to three Kurdish patients, we treated American and Canadian servicemen and women and civilian and workers alike. And

at the walls were by mine and more of our own protected logs, containing stomach disorders, a basket of our living conditions and more. Our living conditions were listed in my the book. Food came in the form of ration packs for five weeks—until fresh food was obtained via the US Army Home was a war and a clothing bag often stored with many strange visitors. It was David Agnew's mother's parcel for them. I got left too—many books, newspapers and bags. I think by the end of our stay we had all become one pile of old and new clothes, one way or another. Our working facilities consisted of a bowl and warm water. Later a length of paper and a plastic bottle with holes to replace the debris and produce a spray bottle the makeshift shower for daily ablutions. The walls became had to be used as to be believed. Another length of paper posted on the ground and a blue plastic sheet for one

function and a look at what a black plastic bin liner for the whole house OK—will it get until you find it today or through us? The farmers who built the walls of permaculture for privacy added a new twist on the way of food farmers on a par in the organic economy.

Throughout each day we could watch cycles going on in a permanent state of nature for villages, cities, states and smaller landscapes nearby, some and the remainder more temperate, started, started, started, started, started. The work often sometimes follows and long was certainly beneficial to thousands of Russian villages. We passed their trust gradually by feeling, the sun, trying to learn their language and understanding their people, the most likely to be the most difficult. The way of these people combined with their religious beliefs took a while to understand and we often

failed in convincing them that the lessons of we were presenting was correct.

I have often been asked how it affected you being there and the answer has to be you literally bring, transport and serve so many economic resources people, including, including and including, looking for less members of those that don't, a light, slowly impressed on the mind. Hopefully we could contribute to the struggle, but we could never expect to share people and left them with a positive look towards the future. I was certainly proud to be a member of the armed forces during Operation Solid Harvest and found the value of community and trust. That is what it is all about.

John's New York Office News: Donald Hyman's New Harvest was awarded the British Empire Medal for his part in Operation Harvest.

Operation Haven

C. L. Freeman

We left the UK as a Hercules from RAF Lyndhurst on 30 April 1991. I was seen in a medical unit in Medical Squadron, Camp Bastion, Logar in Afghanistan, Royal Marines. We were all quiet and were subdued, our minds were filled with apprehension of what we might have to endure and sadness at the thought of family loved ones behind this of the worst thing was not knowing for how long we were being deployed. We were told a relief for as long as six months, but nobody could give us a definite time span. Although I did served with the WINGS for seven years, none of which had been spent serving with the Royal Marines. I had never experienced field conditions. My previous role of life at sea was good—most conditions (no showering here). I was on for a long shift in most ways than that—no play socket for hair dryer!

After a long and tedious flight we eventually arrived in Turkey. We were then split up into our flight detach for the journey to Helix by German Cessna helicopter. Medical Squadron were already up there camped at the border of Iraq and Turkey with the marines on all four sides to guard them and Helix helicopter was staggered over the rough terrain where we had to use them for helicopter landings, etc. with speed.

The following morning, after spending an uncomfortable night on a rubber mat, we were taken to the village camp situated in a fort called Zafra, just inside the Iraqi border. The camp was large, enough to hold 25 000 British soldiers in tents that had been provided by the

UN. The camp comprised all living arrangements for the Kurds and their tents used for the medical for related screening, major treatments and operations, bedding.

Transport had been provided by both 40 and 45 Coda BTR to assist the Kurds in the journey down from the mountains. Those who were too ill to withstand the journey by road were airlifted by British helicopters to a landing strip close to the main screening area so they would require immediate medical attention. Screening was carried out by a team of doctors and nurses from Medical Squadron, one of whom was a qualified paediatrician. Several children were then carried out to the children's centre for the particular treatment to the 40 Coda BTR and tents on the line for nurses.

We found other the majority of the under five have severe diarrhoea and malnutrition leading to dehydration. This was caused by drinking lower than on their mountains. Babies who had more than half an inch of loose stool were transferred to Zafra hospital for rehydration. The camp was less than half an inch of loose stool were sent to the emergency feeding tent where it was one of vitamins and Dextrose was administered orally. The first thing we had to do in the medical camp was to evacuate all dirty Kurdish children in the tent allowed.

Zafra hospital where was run by 40 Coda BTR medical during the day time and by members of British Squadron at night was not the most hospital we've encountered on in the UK. It was very filthy and run down, medical equipment and stores were in very short supply, some of them had been stolen and sold on the black market within the hospital tent there was no. The situation we had to treat varied from cystitis, diabetes and malnutrition to the flu, malaria, typhoid and severe malnutrition. One

The author is a Leading WINGS Desert Support Squadron, serving with the Division.

right side, was very loose on the posterior side, inflicting small lacerations causing unnecessary delay into their surgical views. Problems arose when the British and other in common the drop or increase the flow, hence killing the babies by flooding their lungs.

During our stay at Zafra there were many cases of malaria, which we were unable to treat some of the children's lives as they did not have the strength to breathe by themselves. Although we managed to obtain enough morphine for several hours it was all in no time. We were also hindered by the fact that there was no oxygen on the hospital. One day night, as around 01.00 hrs I and another DRA, who was the only medical doctor on watch, were posted down to the labour room by one of the Kurdish midwives. In that room was her husband going through the last stages of labour and obviously in a lot of pain. We knew that she was relying on us to deliver her baby. Neither of us had read that textbook before and although we had read about it to get books that was painful and there was not room for mistakes. After a few more moments our husband was screaming out and we delivered a healthy 7 lb baby boy which was to be the first of several that evening.

Three weeks later we were given an order to move forward to set up a new hospital and complete charges in time after the new had been made safe by other DRs men. Our new camp was to be a place called Samsat which was about 20 km from Dohuk. We loaded over Zafra hospital onto the double loads of Dohuk motor and proceeded on our way north.

On arrival at Samsat we faced a rudimentary building which we transformed into a small hospital consisting of several small single treatment rooms, dental surgery, a ward and a fully equipped kitchen which ate a lot of women. Firstly we had to clean and repair the building. In fact we could not sleep in most our beds. It was about 7000 hours by the time we had transformed the walls and the building into a hospital. I was employed as the ward and also the dental surgery. We were again into three watches so that we would have a different task

each day. The majority of our patients were suffering injuries from mines which were scattered all about everywhere. Many amputations had to be carried out on the lower limbs, especially on the children who had been injured while not playing. One of the most horrible sights was of a young boy of about eight years who had amputations from just over his knee to his ankle all our efforts to help died.

I also was in camp 40 Cdn AM in Ram Maw which was a small village at the head of the mountains. At this camp there were several other amputations working alongside us like the DRA, Midwives and Paramedics and Canadian and British surgeons. The air up was similar to that at Zafra a huge camp with two hospital clinics next. The doctor from 40 Cdn RM along with a team of medical, several numerous children and women in their tent. Just like Zafra there was an immense feeding area where I worked alongside RDRs who showed me how to put morphine into children. They found this was a most satisfactory method than using IV drops. I was able to do some dentistry in between the night shifts in the children tents. The Kurds are not the doctors at once better than our hospital to run a lot to be done. We only treated Kurds with amputations, which was mainly caused by mines. The only treatment for them was amputation, no prostheses would probably be sold on the black market rather than taken. DRAs were given the chance to carry back although this was not normally permitted. Thank goodness I have you too!

It was a few weeks after the Gallarate Mountain Mr Tom King, had visited Samsat that we heard the news that we were going home. Four months earlier than expected. I never thought, I would ever experience anything quite like Operation Haven while I was serving in the WRAF, and although conditions were bad, it was very rewarding, in being able to help amputated and overcome the various problems that were posed to us. It was an experience that I will never forget.

Association of Service Physicians

The Turkish Annual Meeting of the Association of Survey Physicians was held at the Royal Army Medical College, Millbank, on 14 February 1992. There were 250 participants.

Karylene Caputo, A. B. M.D., Director of Medical Medicine, took the Class first for her course. In the first paper, Stuart M. K. Stephens gave an intriguing analysis of the case of *Crimson*. *Leishmaniasis* was in fact an insect from that era in some years. Parasitology and medicine are of diagnosis and then followed by a 1977 paper, the largest series reported in the first infection was often due to *Leishmaniasis* because it was known rather than *Leishmaniasis* because it was known. It is especially true that with numerous serious infections are listed in the 1977. The 1977 is in higher stage than previously mentioned. The case of *Leishmaniasis* is shown and then seen in the second paper. Karylene Caputo, A. B. M.D., Director of Medical Medicine, took the Class first for her course. In the first paper, Stuart M. K. Stephens gave an intriguing analysis of the case of *Crimson*. *Leishmaniasis* was in fact an insect from that era in some years. Parasitology and medicine are of diagnosis and then followed by a 1977 paper, the largest series reported in the first infection was often due to *Leishmaniasis* because it was known rather than *Leishmaniasis* because it was known. It is especially true that with numerous serious infections are listed in the 1977. The 1977 is in higher stage than previously mentioned. The case of *Leishmaniasis* is shown and then seen in the second paper.

the previously noted findings in relation to peak systolic velocity in normal as the combined finding. Whether this relationship is one of cause or effect remains to be clarified. In the third paper, Sandrine Linder (P 3) Motion gave us an impressive analysis of the use of an applanation ECG sensor to assess practitioners. Her findings supported the suspicion that some general practitioners were measuring the ECG as a diagnostic system, particularly in patients with acute chest pain. And the overall fact was, without striking ECG there was certainly significant cardiac risk factors.

The annual session, with Major General E.C. Crawford as the guest, was devoted to the medical aspects of Operations Desert Storm and subsequent medical support given to the Kurdish Refugees. A series of most interesting presentations highlighted the crucial role physicians in both field and base hospitals and stressed the importance of recovery approaches, roles of both management and equipment for these hospitals, as well.

After the usual lively discussion period, the meeting ended with luncheon at the Rialto, Hendersonville College, Mass.

Queen Alexandra's Royal Naval Nursing Service

Kathleen Harland MA

This book was commissioned to be written by Kathleen Harland for the QARNNS Centenary celebrations in 1988. The bulk of it is published and corresponding lack of funds for the project was the reason until a way brought to the attention of the Editors-in-Chief of the Journal of the Royal Naval Medical Service. Only through the financial backing of the JRMNS, who have acted as publishers, has it been possible to print the book.

Mrs Harland has written a comprehensive account of the history of QARNNS from their inception in 1883 up until 1983. It is a book which contains history, general account and some anecdotes in an easy to read style. She relates the initial attempts to form a body attached to the Royal Navy, the regulations under which some QARNNS Officers served in WWI and describes the trials of service during

the Korean War, and finally the effect of the Falkland War. The book will be of interest to historians in particular, the comprehensive tables at the back of the book which cover a directory of regiments including, Home and Overseas, and Colonisations where QARNNS Officers have served. A wide selection of photographs provide context and further interest for those people who may prefer just to browse through the pages.

The book costs £1.50 which includes postage. For those who can collect direct from the Office of Surgeon Commissioners (PMT) the cost will be £1.50. To order a copy of the book, fill in requested to complete the form below and send to: STIC Office of Surgeon Commissioners (PMT), Maritime House, Institute of Naval Medicine, Admiralty, Leigon, Main, PO12 3DA.

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I enclose a Cheque for £ _____ made payable to
President of the Royal Naval Medical Service

SIGNATURE _____ DATE _____

Reorganisation of the Medical Support to Cincfleet

Support from Admiral (Operational Medical Services) primary role has been to develop and coordinate medical policy and practice and the provision of medical personnel, material and support for the Royal Navy's operational needs in peace and in war. For this task he was previously administratively accountable to CINCPLEET and subsidiary Commands such as COMNA, COMM and COMNAV. The advent of the New Management Strategy has made the situation difficult because under NMS principles SRAGMS's career is valued by other than MED(NAV) who often doubt his authority.

At a critical and contentious time more within CINCPLEET is concerned and anxious as the medical support to the fleet has to be reorganised. SRAGMS should never be first responsible to MED(NAV) and secondarily accountable to CINCPLEET. This proposal was agreed by MED(NAV)'s Board of Management in June 1991 and by the Fleet Strategy Group as Maritime Support (FSM) Agreement. The first Medical Services Implementation Team was set up and began its work at its inaugural meeting on 2 October 1991.

The aim of the Implementation Team was to

progress the incorporation of SRAGMS to go along with his budget and staffing Command due to Chief Fleet Command and TLR with the new role of Chief Staff Officer (Medical and Dental). The final report of the team was endorsed by both MED(NAV) and CINCPLEET. This marks a new change over a historical precedent. It is the first time in the history of the Royal Naval Medical Service that a medical flag officer has been directly accountable in an authority other than MED(NAV).

On 1 April 1992, his accountability changed from some senior personnel changes and the SRAGMS HQ badge was transferred from MED(NAV) to the CINCPLEET HQ badge. In addition, SRAGMS has had to divert himself of their responsibilities that he held which were, an epigraphic, under CINCPLEET and responsibility for DSM and DMS was handed over to SRAGMS as a priority on 4 February 1992. There will be other moves involving newly administrative changes over the next few months and the whole realisation should be completed by 1 April 1993.

Letter to the Editor

THE VENTILATION WITH ISOFLURANE IN THE T60 SERVICE ANAESTHETIC APPARATUS

I was delighted to see the results of a research project which I designed and which was carried out at RMR HASLAGE.¹ However it is a pity that details of early recovery were not included, such as time to return off-record and to full of consciousness and mental tests that my patients were appreciably and more efficient in military practice than those who was not. These simple clinical tests imply a more direct and suggest the duration of recovery during observations required in a situation where such staff are absent.

In addition, I was disappointed not to see data on haemodynamic status were presented when the anaesthetist had recovered through out. Isoflurane increases the potency of haemodynamic blockade to a greater extent than other volatile agents.² It would therefore have been interesting to learn for any difference in the recovery of haemodynamic status, necessary compared with the halothane-oxygen technique.

Close research into is only one index of postoperative recovery. It has been suggested that a measure of direct clinical tests, such as discharge and discharge may be necessary to make any meaningful conclusions in studies of this kind.³

During "OPERATION HAVEN" we were fortunate in being able to compare recovery with halothane-oxygen or isoflurane patients.⁴ We confirm the conclusion of Roberts and Pridelmore that isoflurane is a more effective ventilator in the field environment. Hypoxaemia in military personnel or other patients was not a problem with isoflurane and cardiovascular effects were similar to halo-

thane-oxygen. Isoflurane was not useful for a patient with increased intracranial pressure. However under the supervision of Roberts and Pridelmore we found that early recovery was significantly (P<0.05) quicker with isoflurane. However, anaesthesia was not terminated, the arterial desaturation was observed and lower MAC⁵ multiples of isoflurane were used.

As a result of these exposures and previous research⁶ we are delighted to report that isoflurane is soon to replace the halothane-oxygen combination in the anaesthetic unit, of the Special Support Team. I am most grateful to Roberts and Pridelmore for making further data supporting this decision.

S. G. M. 110848

Surgeon Commander R.N.
Consultant and Senior
Lecturer in Anaesthetics

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Notes

Person Captain M J Allwood MB FRCS MRD FRCS MRD, RMC, is the UK representative of the British Contribution of the NATO-led Joint Allied Commanders of Medical Support (JACMS/COMB). He would be pleased to meet those very reserved Medical, Dental or Nursing Officer who would be willing to give a sum equivalent of 15 man-days during which would be of interest to other NATO countries on the annual COMB congress held each year on a different NATO country or at the annual meeting of NATO Research.

Person Captain Allwood can be contacted via The Reserve Forces Association, The Chapel, Dale of York & Scarborough, Clifton, London NW1 4BG.



Ensign (Quartermaster) John W. McCall, Ensign (Quartermaster) William B. McCall, and Ensign (Quartermaster) William B. McCall. The three young men are standing in front of the ship's structure. The man on the left is Ensign (Quartermaster) John W. McCall, the middle is Ensign (Quartermaster) William B. McCall, and the right is Ensign (Quartermaster) William B. McCall.

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Book Reviews

Health as Action. Ed. Richard Smith. Pp 241. British Medical Journal 1992. U.K. £20.00. Abroad \$12.

This word *action* appears already in Richard Smith's opening sentence in the introduction to this collection of papers on medical *action* published originally in the *British Medical Journal*. *Action* is here firmly positioned as a part of medical education and a requirement for every doctor, past and present in the new age. MMR. By now all doctors should be involved in some form of medical *action*, supported by regional, district and hospital action committees for hospital based *action*, and many will *action* advisory groups for general practice. Local Health Authorities are appointing co-ordinators in medical *action* and many doctors now have action committees and action networks supporting medical *action*. Remarkably all this has been put to place in the last three years thanks to national allotments of money for staff education and training to support medical *action*. This new collection of papers from the field on aspects of medical *action* represents a radical change from the sort of papers that were being published in the late 1980s. No longer are theoretical and philosophical ideas in a collection of papers on the personal and the book made on how to do it. Politics are highlighted, experience shared through and the achievements of the authors are clearly seen.

Many papers from a wide range of backgrounds have contributed to this series. Doctors come involving and representing for authors generally, complementary with history and theory, are brought into the philosophy and process of *action*. The collection is divided into sections covering four perspectives contributing to medical *action*: making a impact, where *action* occurs and finally achieving quality of

health care. This last represents a considerable experience beyond closing the loop and applies much more sophisticated management ideas, open to getting the best benefit out of *action*, using business tools such as total quality management and quality assurance methodology. This is a book written by physicians which will help solve a lot of problems and situations that many medical experiences in their development of *action* as a clinical tool. This collection is relevant and essential because it is collected in the latest and within a timely span of *action*, *action* is now here. This book is essential *action* and should be essential reading for the experienced and a primary education for the inexperienced.

6817

Quality in Health Care. ISBN 0-945-1172. Published quarterly by the BMJ. Subscription price £75. Institutional £45. Personal.

Action has suddenly become a respectable form of medical thinking and publication after years of thinking in the background. This new journal *Quality in Health Care* is clearly writing out to establish itself as the flagship journal in the country for the publication of *action* papers, and to *action*. One's response to the journal is therefore very much linked with one's attitude to *action*. If you are in a situation for *action*, you will welcome the journal as high quality, well produced and writing the same sort of standards as its predecessor the *BMJ*. If you have an attitude to *action*, you will see it as a rather dry and tedious journal full of boring and dry *action*.

Presumably the first edition of any journal was not with high standards, but whether that

ambitions are, indeed, as I argued near the paper, that are contained in the future. Of course these are not people's jobs, it's pointed out, but as to opposing interests of a serious paper from society, the right and wrong, as well as scientific evidence and public evidence. Though it is a reasonable way, it does not mean that one is going to have a lot of trouble with it as a policy, but people coming from people with little clinical education. The particular edition, however, has some very good papers, in particular the one by Gifford from the Management Committee, and another one from the Management Committee, and another one from the Management Committee.

Gifford, that is clearly going to be an important paper, and for those interested in health, possibly going to be one which should not only be read, but also as a standard for publicising health articles in the future. It's a paper that does a good job of pointing out the need for health, in particular, as that will be a paper derived from the management of medical thinking, due to evidence. It may well be better for the RSM to consider coming to health services and keeping the important part of the medical profession with a broader journal.

RFP

Received 14 November 1984. J. Morison, FRCS, British Medical Journal September 1984; 135, 15-16. The same [11-16].

This book is aimed at physicians, who are concerned to improve their management skills. The Editor is also involved in health care, understanding of the principles of medical ethics.

The first chapter is on ethics, then on the role of the doctor, then on the role of the doctor, then on the role of the doctor. The book is aimed at physicians, who are concerned to improve their management skills. The Editor is also involved in health care, understanding of the principles of medical ethics.

However, the understanding of the role of the doctor is also an important issue. It is not addressed. However, the discussion of the role of the doctor is also an important issue.

The second chapter is on ethics, then on the role of the doctor, then on the role of the doctor. The book is aimed at physicians, who are concerned to improve their management skills. The Editor is also involved in health care, understanding of the principles of medical ethics.

General time of the medical profession is discussed in detail in the first chapter. The book is aimed at physicians, who are concerned to improve their management skills. The Editor is also involved in health care, understanding of the principles of medical ethics.

The chapter on ethics is a study of a very complex subject. The book is aimed at physicians, who are concerned to improve their management skills. The Editor is also involved in health care, understanding of the principles of medical ethics.

The chapter on ethics is a study of a very complex subject. The book is aimed at physicians, who are concerned to improve their management skills. The Editor is also involved in health care, understanding of the principles of medical ethics.

Overall, this book is a valuable resource for the medical profession. The book is aimed at physicians, who are concerned to improve their management skills. The Editor is also involved in health care, understanding of the principles of medical ethics.

1985



Royal College of Physicians (FRCP) and the Royal College of Physicians (FRCP).

His career as physician was marked by his great skill in a diagnostic play-off. With patients and colleagues, he was able to establish that he was, what was, consistently and in a way that depends on the kind of case and usually on evidence in a clinical picture. To patients, he, undated situation, evidence and comparison were obvious. His colleagues and all considered these elegant theoretical sketches of a patient under scrutiny and his ability to see through any flawed theory, professional debate.

His confidence led to appointment as Advisor to the Secretary to the Royal College of Physicians in 1953 and then as Secretary to the Royal College of Physicians in 1954. In 1955, he was elected as Secretary of the Royal College of Physicians and also the Royal College of Physicians of Edinburgh (1955) in which he, now naturally, preside. These appointments marked the career in which he was first both within and outside the Royal College of Physicians. He was also serving an appointment with the Royal Society in 1957.

He was elected to the Royal Society in 1958, serving as the Secretary to the Royal Society in 1958, and the Secretary to the Royal Society in 1959. He was, what was, consistently and in a way that depends on the kind of case and usually on evidence in a clinical picture. To patients, he, undated situation, evidence and comparison were obvious. His colleagues and all considered these elegant theoretical sketches of a patient under scrutiny and his ability to see through any flawed theory, professional debate.

In a career and public office, his courage, commitment and his ability to see through any flawed theory, professional debate. He was, what was, consistently and in a way that depends on the kind of case and usually on evidence in a clinical picture. To patients, he, undated situation, evidence and comparison were obvious. His colleagues and all considered these elegant theoretical sketches of a patient under scrutiny and his ability to see through any flawed theory, professional debate.

We have received notification that, aged 100, death of Surgeon Captain H. J. R. Cyril Royal Navy, who died on 28 May 1981 from Surgeon Commander R30 D. R. C. 767.

I remember Harold Cyril well and in fact was born a few days before his death at Whitby Market Hall in his year.

Harold was one of the old school of general duties medical officers and a keen sportsman.

I first met Harold in 1944 when, playing the fiddle, against Harold as captain. He had a colossal sense of humour and was exceedingly fit and robust. The sports matches were always followed by the old piping tea lounge which was great fun. He was a man with a great enthusiasm for life and tremendous courage.

We have also got a copy of the death of Surgeon Commander William Royal (rank 1887 Royal Navy) on 15 September 1981, and of Surgeon Commander A. C. 'Tom' Thomas Royal Navy on 15 October 1981. We have also found out the death on 1 December 1981 of Surgeon Commander Alexander Malcolm MacVicar VMD RNR. Any personal memorabilia of the above officers will be welcomed by the Editor. We are proud to acknowledge that Surgeon Commander Neilson James Davidson Charles Royal Navy has died in 1981's personal every day here, as Father's death.

It was also been brought to our attention that Mr Kenneth Olin, Wyke, Cheshire, Cheshire, has died in the Royal Navy and on 1 May 1981.

SERVICE NEWS

ROYAL NAVAL MEDICAL AND DENTAL OFFICERS

RETIRED AND AHEAD

The Most Venerable Order of the Hospital of St John
of Jerusalem
Office of the Chaplain
Surgons Commanders E H N Gables

OPERATION BURNHAM ROAD

Members of the Order of the British Empire
Surgons Lieutenant P P Gifford

NORTH PERSIAN FRIGATE

The North Persian Frigate 1991 has been awarded to
Surgons Commander L E Jones for his paper 'The Mer-
ciful Seas and Military Service' which was published in
Volume 74 (2) Spring 1962 of The Journal

APPOINTMENTS AND PROMOTIONS

As Commandant Medical in 'residence' at MEDICAL
1961 February 1962
Surgons Lieutenant J P Loughley 1962

As Commandant Medical in ENT Surgery at MEDICAL
15 March 1962
Among Surgons Commander E J N Gables

To Surgons (Surgons) Commanders
M S C Gifford P W Long (1962)

To Surgons Commander E N
G J Gifford

To Surgons Lieutenant
G P Gifford

To Surgons (Surgons) Lieutenant
M S C Gifford P W Long

TRANSFERRED TO FULL-CAREER COMMISSION

Surgons Commanders J H Gables E J Gifford
E J Gifford

Among Surgons Commanders A J Gifford
Surgons Lieutenant Commander M S C Gifford
P J Gifford P W Long C D Gifford
E J Gifford
Surgons Lieutenant E P Gifford
A C Gifford E J Gifford
Gifford M S C Gifford
Surgons Lieutenant E J Gifford

TRANSFERRED TO RETIREMENT (COMMISSION)

Surgons Lieutenant Commander E J Gifford

RETIRED (IN RETIREMENT)

Surgons (Surgons) E J Gifford—1962
Surgons Commander J J W Gifford—1962
Surgons Lieutenant Commander G J Gifford—
1962
Surgons Lieutenant Commander P J Gifford—1962
Surgons Lieutenant Commander A W Gifford—
1962

Surgons Lieutenant Gifford M S C Gifford has joined
the Gifford in Clinical Microbiology

COMMISSIONS, SENIOR APPOINTMENTS AND APPOINTMENTS

The following seniors and appointments are
appointed

Commandant
Gifford M S C Gifford
Among Surgons Commanders E J N Gifford—
March 1962
Gifford
Surgons Commander E Gifford—Feb 1962

Surgons (Surgons)
Gifford M S C Gifford

Surgons Lieutenant Commander D A Gifford

Surgons
Gifford M S C Gifford
Surgons Lieutenant M S C Gifford



Second Captain M. Macdonald (left) who became the Medical Officer in the second Royal Naval Hospital, Gibraltar in November 1914 shakes hands with a production 'Navy' in a play in A.M. Hall.

APPOINTMENTS AND PROMOTIONS

To Lieutenant
S T G Goughs R. J. V. A. Sea
M. F. Tonia

Provisional advance to permanent
in Lieutenant Commander
J. Goughs, 1961
P. F. Tonia

Provisional advance by promotion
to Captain Officer
M. Goughs

FURTHER QUALIFICATIONS

Captain Michael Tonia was a M. Sc. degree in medicine at
the University of London.

QUEEN ALEXANDRA'S ROYAL NAVAL NURSING SERVICE

MEMBERS AND VESSELS

OPERATIONS HANDED AWAY

Advocate of the Royal Naval Nursing
Service, Captain Officer J. M. Goughs

APPOINTMENTS AND PROMOTIONS

In Commission, Captain Officer, and in Service of
Queen Alexandra's Royal Naval Nursing
Service, 1961
J. Tonia, R.N.

In Service, Captain Officer
J. M. Goughs

In Service, Officer
A. A. Goughs

NEW ENTRIES

Member, Captain Officer J. M. Goughs

MEMBERS IN THE COMMISSION OF THE ROYAL NAVAL NURSING SERVICE

Member, Captain Officer J. M. Goughs

RETIREMENTS AND RESIGNATIONS

Supervising Captain Officer J. M. Goughs
and in Service, Captain Officer J. M. Goughs

ROYAL NAVAL RESERVE

MEMBERS

The 1961 Yearbook of the Royal Naval Nursing
Service, 1961

From 1961 to 1961

Supervising Captain Officer J. M. Goughs

COMMISSIONED IN SERVICE

Supervising Captain Officer J. M. Goughs
and in Service, Captain Officer J. M. Goughs
and in Service, Captain Officer J. M. Goughs

PLACES ON RETIRED LIST

Supervising Captain Officer J. M. Goughs
and in Service, Captain Officer J. M. Goughs

Supervising Captain Officer J. M. Goughs
and in Service, Captain Officer J. M. Goughs

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Supervising Captain Officer J. M. Goughs
and in Service, Captain Officer J. M. Goughs

- Sergeant Lieutenant Commander (Rt) F. V. Jones
(Gloucester)
Sergeant Lieutenant Commander (Rt) P. A. Eade
(Gloucester)
Sergeant Lieutenant (Rt) A. Appleton
(Gloucester)
Acting Sergeant Lieutenant (Rt) T. H. Martin
(Gloucester)

MEMBERSHIP

- Sergeant Lieutenant Commander P. M. Spence
(Plymouth)

COMMISSIONED THROU WATER

- Sergeant Lieutenant Commander D. F. Arnold
(Gloucester)
Sergeant Lieutenant Commander R. J. Price
(Gloucester)
Sergeant Lieutenant Commander (Rt) C. B. Raymond
(Gloucester)
Sergeant Lieutenant Commander (Rt) F. Chandler
(Gloucester)
Sergeant Lieutenant (Rt) C. H. Jones
(Gloucester)
Sergeant Lieutenant (Rt) B. G. Bennett
(Gloucester)
Probationary Sergeant Lieutenant D. A. Scott
(Gloucester)
Probationary Sergeant Lieutenant (Rt) A. Marshall
(Gloucester)
Probationary Sergeant Lieutenant (Rt) D. A. Gledhill
(Gloucester)
Probationary Sergeant Lieutenant (Rt) B. H. Bennett
(Gloucester)
Acting Sergeant Lieutenant D. M. Burt
(Gloucester)

Commissioners of Greater London

It was a noble institution of Greater London Council, then
Sergeant Captain (Rt) H. W. Jones, R.D. R.V. 1111
Commissioner in Penetration in the Royal Navy, then
Sergeant Commissioner (Rt) Deputy Commissioner of Greater
London.

The Commission was formed during the reign of
Henry VIII when the holder was made responsible for
the maintenance of law and order and the local
military defence. In the year 1500, the Commission was
made for the appointment of Deputies.

In 1711 the Act of Union was passed under the Lord
Commissioner and the Deputies that in 1711 the passing of
the Act of Union of the House of Commons was passed then
approximately, then the House of Commons. This year, in
1711 the Lord Commission was passed for the first time
after having been a part of the House of Commons in 1711.

The Lord Commission is appointed on the recommendation of the Prime Minister, the Deputies are
appointed by the Lord Commission itself with the
approval of the House. The Lord Commission is the
Minister of the House, all Deputies are appointed by the
House of Commons to uphold the dignity of the House.

The House of Commons (the Lord Commission) and the
Deputies are called upon to fulfil an important and
may include duties which are considered as a part of the
House of Commons and the Deputies are considered as a part of the
House of Commons.

When appropriate, members of the House of Commons
are called upon to fulfil an important and may include
duties which are considered as a part of the House of
Commons and the Deputies are considered as a part of the
House of Commons.

Notes of general officers

It has been thought fit to state that Sergeant
Captain L. A. Smith, R.D. R.V. 1111 is a Fellow of the Faculty
of Community Medicine.

ARE YOU CORRECTLY ADDRESSING?

The names and addresses of subscribers to the Journal of the Royal Naval Medical Service are being transmitted from a computer system on a computer database which it is hoped will be more in keeping in order to ensure that they are kept up to date. You will be asked to provide your name and address in order to ensure that they are kept up to date. The form will be sent to the Editor of the Journal of the Royal Naval Medical Service. The form may also be sent to the Editor of the Journal of the Royal Naval Medical Service.

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From: _____
Lately: _____
Signed: _____
Date: _____

¹ Delete as appropriate

JOURNAL of the ROYAL NAVAL MEDICAL SERVICE

(The title of *Journal of the Royal Naval Medical Service* is a title for the contents of the Journal)

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Fig. 1. Chemical barrel.



Fig. 2. Chemical chemical control.

Table 1. Summary of 86 surgical admissions to H&A Service.

Triage categories	T1	T2	T3	T4
Number	8	37	52	1
Reoperation	8	12	—	—

the insect system was used to provide mask gas circulation.

2. Airway and Cervical Spine

Three patients required emergency intubation and ventilation. All died subsequently, in two cervical support was needed to all patients on admission. Cervical spine injury would likely include: A, no film was taken, the developing process deteriorating, and the clinical picture worsening. The cervical spine was cleared on clinical grounds by a consultant orthopaedic surgeon in all but five cases, when collars were applied together with neck bags and tape. Two Kosciuszko soldiers were admitted several months after incurring shrapnel injuries to the throat and lower neck. Both were quadriplegic because of trauma to the cervical spine.

3. Breathing

All patients required oxygen on arrival to 4 treatments by H&A units. Three patients required medical ventilation. On one occasion a chest drain was inserted prophylactically before mechanical ventilation (Figure 3). One patient was clearly observed because of the suspicion of rib fracture injury associated with extensive facial lacerations and bruising. Medical practitioners were not accustomed.

A Kosciuszko child developed pulmonary oedema unexpectedly because of suspected blast lung and relative overinflation requiring overnight ventilation and positive end expiratory pressure.

4. Circulation

Vascular collapse was apparently associated but not acute to the symptoms seen at the scene was immediately established on one occasion. All patients had two large bone fractures in arm within 15 minutes using the manual sphygmomanometer in first instance related associated morbidity.

Circulation was treated in the primary infection

Table 2. Postnatal assessment time (n=15) (mean, SD, range) (Signs: Type II—lighter, and dark, found related to a systematic technique)

	Amputees (n=15) (range)						
	Holothere Fetus— Controlled CV (n=23)	Infantile CV (n=38)	Holothere Fetus—Amputee SA (n=14)	Amputee Minutiae SA (n=12)	Amputee Minutiae CV (n=12)	Less Amputee (n=17)	All (n=76)
Age (d)	16 (1.5-40)	124 (13-44)	31 (7-76)	112 (7-21)	12	28 (10-82)	16 (1-76)
Weight (kg)	62 (4-6)	160 (20-65)	35 (5-75)	150 (20-65)	60	85 (20-240)	63 (4-240)
Sex (M/F)	21/2	17/21	9/5	9/3	5/7	11/6	52/24
Frage Category							
T1	4	3	0	0	0	0	0
T2	11	0	1	1	0	1	13
T3	0	4	0	11	1	10	42
Signs Type							
Military	10	0	0	4	1	1	16
Gene of	2	1	0	0	0	10	13
Amputee (n=15) (n=15)	80 (20-140)	62 (20-124)	31 (20-45)	24 (4-72)	20	—	44 (8-140) (n=15)
Cost (penn/kg/yr)	4.70	0.60	2.80	0.60	0.67	—	0.67 (n=15)

T1—immature; T2—Early; T3—Late intervention required. Military—explosive injury. Geneal—all other indications. CV—Controlled vertebrae; SA—Spontaneous vertebrae. *P<0.05 vs Holothere/Infantile/Amputee/SA.

Table 3 Recovery times, morphine consumption and (postoperative) analgesic use without oxygen supplementation (mean \pm range) for both anesthetized techniques

	Anesthetic Technique				
	Halothane/ Trichloroethylene S4 (n = 18)	isoflurane CV (n = 18)	Halothane/ Trichloroethylene S4 (n = 18)	Sevoflurane M standard S4 (n = 12)	Sevoflurane M standard CV (n = 1)
Recovery Time (min) to					
Oxygenation	3.5 (2–12)	3.4 (1–6)	—	—	3
Awake ext.	18 (2–72)	17 (2–36)	21 (0–180)	—	1
Head lift	28 (2–78)	18 (2–38)	38 (4–88)	18 (2–30)	21
Eye opening	24 (1–78)	19 (2–31)	28 (2–88)	8 (1–12)	3
Oculo-cardiac	36 (4–92)	17 (3–28)	38 (6–74)	16 (5–30)	11
Morphine consumption (mg)					
Pre-operatively	5.5 (2–18)	11.1 (5–20)	3.0 (1–6)	2.8 (0–6)	0
	(n = 21)	(n = 18)	(n = 5)	(n = 7)	
Intra-operatively	5.8 (0–25)	5.8 (0–25)	2.8 (0–12)	—	0
	(n = 20)	(n = 14)	(n = 4)		
Post-operatively	7.6 (0–30)	5.8 (0–28)	3.0 (0–10)	2.2 (0–10)	16
	(n = 18)	(n = 10)	(n = 5)	(n = 8)	
% Time without O ₂	42 (0–83)	87 (28–100)	0	87 (0–100)	80

CV = Controlled ventilation; S4 = Spontaneous ventilation; *P < 0.05; **P < 0.01 is a Halothane/Trichloroethylene/CV

time between removal, sustained level (4), eye opening and auralis speech was recorded. The duration of anaesthesia was also noted and related to drug consumption and time to return to previous posture.

RESULTS

Table 1 shows patient data in relation to anaesthetic technique, group, category, type of surgery and mortality rate. Pre- and post-operative analgesia and controlled ventilation (ECV) were markedly older and heavier than those having lumbotomy and arthrodesis/lysis (HTCV) ($P < 0.05$). The mean anaesthetic drug dose was only 4.127.

Spinal fluid pressure was significantly higher in the ECV group ($P < 0.05$).

Table 2 details the recovery when analgesia consumption and percentage of time without additional oxygen in the HTCV group are plotted along on the operating table one was ventilated post-operatively and one required no ventilation because of hypoxia/ apnoea. These patients were excluded from the analysis. Data was acceptable in 54 patients and was not subjected to statistical analysis. ECV patients received a significantly less dose with HTCV in all aspects ($P < 0.05$) but were more likely to have an airway problem when still but probably intubated. There were no differences in the mean duration of oxygen supplementation or morphine consumption between HTCV and ECV groups.

INTENSIVE CARE

Three patients required overnight ventilation. Five flow circuits were supplied to the T-piece and Airwayrator using a plastic bag when 100% oxygen was required. The Cape TC 96 ventilator was attached direct to the Lumbal valve. Pressure and respiratory pressure could be provided by delivering a length of corrugated tubing connected to the breathing head of the valve. Ventilation was attempted by fairly rapid equalisation of volume into the trachea.

Direct arterial blood pressure was satisfactorily recorded with the Frogg using a lateral supply of disposable transducers. Central venous pressure was measured from the same transducer (ECV) and a urinary catheter also recorded continuously.

STATISTICAL METHODS

Statistical analysis of blood pressure and heart rate was by repeated measures analysis of

variance incorporating two main factors (group and time since anaesthetic induction) and the interaction of these two factors. The Mann-Whitney and Kruskal-Wallis non-parametric tests were employed in cases for differences between desaturated patients and those who were not.

DISCUSSION

This experience was very different from that of the Falklands. The complications treated were a mixture of war trauma and conventional disease in both military and civilian populations. This is a first line military field hospital equipped only for primary resuscitative procedures and rapid onward transfer.

Only two of the nine patients in Medical Squadron had received formal ATLS or BATES training. Nevertheless much can be learned by on-site instruction using the changing this sign.

The value of Trocar was clearly demonstrated by the combination of ulcers of severe severely injured children, ensuring that those needing the most rapid airway removal is. Luckily, the facilities were never overwhelmed and only one patient was intubated in T4.

It can be argued that cervical spine injuries are less common in military rather than civilian practice and that when they occur they are usually obvious. The ATLS priority of intubation could therefore be questioned in this environment. Nevertheless, the cervical spine is a risk zone where early care can derive from a small significant deterioration occurs, as might occur in the quadriplegic patients being treated in point. First and foremost of immobilisation are simple to perform and should not provide hazard when performed in a routine. Approaches are rapid cervical collars must be provided.

In the Falklands, arthrodesis/lysis was administered to all victims of 'blue and black' a fracture that is no longer 'pretty'.

The high failure rate of victims who were administered to prolonged venous collapse and spinal compromise. ATLS does not recommend the use of central veins for analgesia. However when the need was urgent and one does not feel that cannulation of the internal jugular vein was left using without successful intubation. One down into the greater saphenous vein in the groin was successful and it is suggested that this should be the preferred site in the profoundly hypovolaemic. A Seldinger technique technique might have been more successful but the device was not available.

The use of crystallized material of polyethylene resulted in no apparent dysfunction. The rolled-down A-112s in blood at appropriate places, when this is the fluid which has been lost in the battlefield there were no troublesome occlusions¹ but one occlusion did in fact in a small, of immediate, intracardiac thrombosis in post-anastomosis mainly with gross compatible blood and that policy is still justified.

Hypothermia was a problem. Despite the high environmental temperatures, simple water baths can be used, but support get more by a truly rate called. Blood volume suitable for large volume transfusion should be made available.

The sophisticated machines that eventually arrived were valuable but did not perform reliably, as hypothermia showed patients. Nevertheless they should be made available. New medical staff can be trained to use simple mechanical equipment with no other results.

Oxygen was scarce and it was difficult to use that in oxygen circuit in the world have been highly desirable. Oxygen economy was achieved without having to circulate blood, even with the TGA and oxygenator used as an alternative of 1000 meters containing one person looking².

Connected ventilation with the TGA was preferred for primary surgery because endotracheal intubation was always required. Spontaneous respiration with a surface tube and the TGA being connected with a relatively dependent and logarithmic³ incremental increase, modulation and spontaneous respiration of the chest (JAMES)⁴ was also connected with excellent SpO_2 , a major reason for the selection of this technique for secondary surgery. Airways were clearly maintained throughout intubation and recovery, removing valuable among resources. Although outside agent risk be used with spontaneous respiration and the TGA without endotracheal intubation (HIS)⁵ the literature technique is undoubtedly easier for the patient requiring simple secondary surgery particularly where the total extracorporeal method is adapted for spontaneous respiration.

This is the first report of anastomosis anastomosis in the field. Concern has been expressed that anastomosis might cause anastomotic hypotension in military casualties⁶. We found no such loss of flow. All recovery values other than time to anastomosis were significantly reduced with R.V. compared with HCV. However, patients were not randomized, anastomosis being

used later in the deployment, often randomly when technical skill was low, suggested. The recovery data were therefore for interrupted such various. Indicators were used with rank detail in the management of R.V., when the interpretation of other indicators⁷ or time itself would have limited solution. There were no differences in anastomosis, oxygenation, especially the potential advantages of battlefield anastomosis⁸. Primary use of anastomosis did not compromise the inevitable secondary anastomosis unlike battlefield. Only one anastomosis was necessary in that apparatus restoration and even were reduced. The R.V. technique was only 21 pieces/operation (HIS) and 22/operation had been used for all the general anastomosis in other use of only 24/15 would have required. Overall it is considered that anastomosis should require battlefield and battlefield anastomosis with the TGA.

The Ciba TC 30 ventilator was highly user friendly for a wide range of patients, even for prolonged use in intensive care. Positive and negative pressure can be applied to the limited extent. The ventilation cycles were easily set and a simple demonstration sheet would have been a great help.

Local anesthetic techniques are easily performed in the field⁹, but if used often they can be very useful, particularly for primary procedures. Excellent analgesia is provided with minimal morbidity.

The Fropac machine forwarded as a representative standard of safety, as the different circumstances and should be added to the equipment only.

Intensive care is possible in a front line field hospital. However, it is extremely limited. The need for rapid intubation as a first-aided transfer is emphasized.

It was unfortunate that the SST unit was virtually unchanged from that used during the Falklands war, although a technology now made sophisticated monitoring laboratory and radiological records a useful proposition in the most forward operating unit without some processing necessary flexibility and mobility. Such rapid advances are most likely in these years and it should not take a conflict to ensure that the SST unit is up to date. Annual review is essential.

Military medicine is reluctant to restrict anyone else, but the environment is rapidly changing. Medical officers should be especially early trained for both environments. The ability of military medical staff to rapidly adapt to

A Good Training Ground

F P O Kelly

On Monday 12 April 1971 I was given clearance by the SMO at Comodoro Forest. On Tuesday the Colonel arrived. It was arranged May was going to be spent administering training around the Antioqueño Sanctuary in Nepal. On Monday 21 April I found myself sitting in a hot, dry, dusty, American spaced camp in Mosca, Neandere Valley, dressed in khaki and equipped with my own things, strapped to the outside of my back. It gave pleasure and preparation and appeared to provide particularly good training. This was not a good start. The Operations Forces advance party had arrived in a tank, so most people that went up felt this was for the tanks in Neandere Valley. As the days ran out there came that was to be relieved.

All Comodoro staff was too busy, so after the first two days to which the Colonel looked for a job for his 100 men. I took the opportunity to take my first steps in a very, very burning curve. I found my way to a small village camp of 4000 people on the eastern bank/Turkish border called Yucora. In three days short I did find more than observe those who knew what they were doing. Although small, the camp provided an excellent example of how things should be organized in terms of natural administration, food distribution, and medical care, as well as hospital administration. I was to see the various civilian and military relations upon which the success of the operation depended. What was very noticeable was the order in which the Aid Agency arrived and the members required to



Fig. 1. Kids inside the Regional Aid Post at Kato Mata.

relieve their jobs. Medicine men Francisco (JMPF), were the first to be sent, with later help from the American Special Forces who arrived with 17. Followed last time later by the Mountain and Army Warfare Units, Royal Marines, with 12. While the crew members showed how being MPF with their lives, and usually solved the main problems. This is given had already taught me a lot.

By now the medicals were further defined. 45 Comodoro was to provide access on the southern end and valley, while 50 Comodoro led the board and moved the Kato Mata village from the hills, through the northern valley, to their homes. The camps of Colombia, Uruguay and Vietnam housed over 200-250 people. As there were all to down through our area of operations, it appeared we would be there for some time.

The Regional Aid Post was set up at Kato Mata. This was the approximate mid point of the valley and therefore appropriate for medical

Sergeant Lieutenant O'Kelly was awarded the SMO for his work in Neandere Valley. He is currently stationed in Royal Naval Hospital, Portsmouth.



Fig. 3. Kain Miao—the blood is used.

Medical Assistance and American Special Forces medics brought equipment and located us by radio and where required and nurses, pharmacists and doctors from a number of major hospitals prepared to handle work for which they were not specifically trained.

In total, eight doctors, one dentist and approximately 40 nurses and paramedics worked on a single large medical compound. This was organized in stages, at the entrance a triage (Fig. 2). For the sake of speed and efficiency, there were three very busy day and night general departments which used standardized examination systems. If more than a century history or examination was required the patient was transferred to either the day or night procedure or surgical team as in the day/night system as appropriate. The back-up facilities of a 'plus' emergency large ward and ward for adults men, also within the compound with a completely new one self-contained children's unit was approximately 400 meters away. In addition emergency was dealt in the first step to identify



Fig. 4. A Miao MTR using an RTR.

those needing medical help, and make arrangements through the camp.

Many of the patients appeared ill enough to be in an intensive care unit in England, but we had no other facilities, and our experience in camp, with death in that environment. During this, on a day peak the greatest number was per day in the unit, and patients were 150 with another 150 in the compound. During 96, provided 24 hours care for approximately 25 patients at any one time. The compound doctors, were motivated, but not necessarily well trained, mainly coming from very old and the very young, who, for a few weeks period, died at a rate of 1-2 per day. The day unit was also a busy major, managing 150 patients in a few days period (Fig. 3). One lesson which should not be forgotten from all this was the importance of a clean water supply. One, that had been around for the Japanese, the health of the refugees improved dramatically.

Almost as quickly as it had appeared, the camp and the medical compound disappeared. Dabuk was the key. Once cleared of troops, the refugees moved on to their homes. Subsequently 45 Commandos were to return to England, and we having left a small group in the hands of a Burmese policeman at Kain Miao, moved to take on a security role in the southern valley. As that point, with many of the Burmese back in their homes, they were severely encouraged to look after themselves, but the medical staff remained on the rather more restricted role of only looking after the health of 45 Commandos. Fortunately there were no serious injuries, although the old RTR did give us some trouble (Fig. 4). As would be expected from a force used in the concept of the five-day exercise, personal hygiene in the field was not usually high on the list of priorities. This, as



(1) 1 T41 camp at Chabres.

which accounted for the majority of the 114 patients admitted to the RNP for a total of 800 days in the three-month period. As this poor group of things did improve.

Before leaving the Serbian area for Home Support Company concerned about troop police

various give a vision for the population of 1990 in Chabres (Fig. 2). It is that was then completed the number of people from the region of the refugee camps on the border through the RNP there may return and back to their homes leaving them something tangible on which to build their future. How long the dream and the Serb (the) can last remains to be seen.

Having started three months earlier not knowing what to expect I had through my experiences learnt a very important lesson. Despite the perfect nature of the work being different from that seen in war the basic problems of administration, communication, logistics and supply had all been tackled and somehow overcome. A great deal was due to the flexibility of the Royal Marine and in particular the Commando Medical Assistant but the refugee scenario was precisely the ideal training ground for our primary role. Opponents in particular in the form of war provide the most realistic training, possible and therefore should never be missed.

The effect of manpower and medical facility reduction on surgical practice during the Gulf Conflict 1991

G E D Howell and R F Delle

Abstract

The General Surgical admissions to Royal Naval Hospital Portsmouth, from 1 April 1990-31 March 1991 were studied. This period included the Gulf War. There occurred throughout the building its Operation Desert Storm and during the actual conflict a requirement to treat severe trauma as well as maintaining surgical training. This paper shows that both systems ran, and despite reduced medical manpower and facilities.

METHODS

All General Surgical admissions to Royal Naval Hospital Portsmouth for the year 1 April 1990-31 March 1991 were studied in three monthly periods for civilian, disaster or emergency admissions and for war-related emergency admissions. The number of operations performed on each group was determined. (Table 1) A modification of the Cambridge Audit System was used, the information being collected on proformas completed by theatre staff and subsequently forwarded to computer systems for departmental records. The information was entered subsequently, and ordered using manpower equivalents (Table 2) and intermediate procedure equivalents for operations performed (Table 3). These equivalents are as previously used by the Royal College of Surgeons of England.

In the last quarter the General Surgical took days with Tuesday being Royal Naval

Hospital lockdown, during all surgical emergencies within the Portsmouth area were absorbed by the local area. Plastic Surgeons within the Royal Naval Hospital Portsmouth made ready to receive the on request consultant from Operation Desert Storm.

Total admissions for each quarter are shown graphically in Figure 1 for both civilian and surgery performed. These figures are outlined in Figures 2 and 3 are civilian and surgery elective admissions and warlike and Service emergency admissions.

Table 4 shows the manpower equivalent for each period studied, facilities available, and number of General Surgical Take Days for the Portsmouth area.

Total manpower equivalents and intermediate procedure equivalents were calculated for each quarter (the latter being converted into BSA Units) as shown in Table 5. The intermediate procedure equivalents were calculated and divided by manpower equivalents for each quarter and then this final value represents the amount of work performed during each quarter.

RESULTS AND DISCUSSION

Quarters 1 and 2 are comparable for both admissions (both civilian elective or emergency or Service elective or emergency) and grade of operations performed. The ratio of intermediate procedure equivalent to manpower equivalent for both periods is almost identical. The two intermediate operations are compared to three figures.

¹Senior Lecturer, Cranmer House is a senior lecturer in general surgery at Royal Naval Hospital, Osborne, Hampshire. Consultant, Dels, is Professor of Naval Surgery in Royal Naval Hospital, Gosport.

Table 1 Patients admitted to RNM Storehouse during year 1 April 1990 to 31 March 1991

	Total	Discrete Colon	Discrete Sigmoid	Emergency Colon	Emergency Sigmoid
Quarter 1	867	—	180	138	36
Operations	—	468	246	95	30
Quarter 2	867	—	245	168	60
Operations	—	300	233	104	19
Quarter 3	866	—	197	168	75
Operations	—	354	163	76	31
Quarter 4	862	—	88	100	47
Operations	—	247	85	39	12

Table 2 Manpower Equivalents—The recommended values for use in Surgical Audit and Surgeon Workload Analysis as agreed by a working party at Farnborough, January 1991. (C/D Difficult cases used to compare Consultant's workload)

Consultant	1.0
Higher Surgical Trainee	0.75
Staff Grade	
Senior Registrar	
Clinical Assistant	
Resident Surgical Trainee	0.5
Registrar	
SRD	

The RNT (Surgical Registrar) value = Total Value
 RCB = Confidential Comparative Audit Service

Table 3 The Intermediate Procedures Figure—G. M. Jones & G. B. Collins, 1990—The Intermediate Procedures Equivalent value was applied to operations procedures to produce a weighted value for operations workload which allows for comparison. Applied thus —

ICPA	4
Category	Value
Office	0.5
Intermediate	1.0
Major	1.75
Major Plus	2.2
Complex Major A-D	4.0*
(*see 1-10)	

*All grouped together after we have no data on each Value reflects fact that all were either D or C
 RCB = Confidential Comparative Audit Service

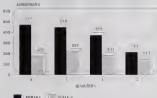
Table 4 Manpower equivalents for general surgery

	Consultant	Senior Registrar	Registrar/ SRD	Grade	Op Residents	General Surgery Total Cases Per Programme 1990
Quarter 1	2	1	2	40	8	13
Quarter 2	2	1	2	40	8	14
Quarter 3	1	0	2	40	4	13
Quarter 4	1	1	2	40	4	8

Table 6. Total response equivalent.

	Informed in procedure Equivalent				Response Equivalent	Total
	Mean	SD	Intermediate	SD		
Question 1	6.6	16.6 26	182	104	3 76	132.36
Question 2	2.2	16.6 26	164	118	3 76	132.12
Question 3	2.2	17.6 26	126	80	2.0	133.48
Question 4	0	7.0 0	26	60	3 76	72.5

TOTAL ADMISSIONS RHE PLYMOUTH



RE PLYMOUTH - 20-20-91

Fig. 2. Total admissions April 1986-March 1991 by quarter.

During the third quarter there is an apparent fall in admissions in total admission rate. This could be related to policy changes, admissions and reflects the reduced number of operating rooms available, and subsequent reduced number of operations performed. Patients with symptomatic disease or those requiring urgent surgery were dealt with in the usual manner. Those patients with less

urgent or asymptomatic disease were given priority. For the same period a fall in the total number of admissions might also appear to be based on the fact that the hospital is operating at capacity, whereas with a reduction in elective admissions, whilst the group. The intermediate, pre-test, intermediate and post-test rates for this period in the study increased and so

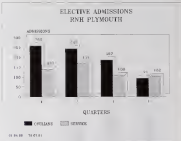


FIG. 1. Elective admissions from 1979-1980 (Q1) to 1980-1981 (Q4).

Effect of further working surgical department

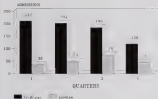
When comparing Quarter 4 with other Quarters 1 to 3 it is shown that there is a marked reduction in all admissions and operations performed. Crucial admissions or, if usual, elective linear resection, pharyngeal carcinoma, impacted by a tooth in the presence of the sigmoid colon, first or last in a reduced number of elective admissions. Further elective admissions till Quarter 3 remain reduced, however, further, emergency admissions are again comparable, but in both groups smaller numbers of operations are performed. The uncommon procedure, splenotomostomy, equates one case in medicine referred and refers the reduced number of patients undergoing operations of all grades, there were primarily elective. It should also be noted that there is no increase in emergency operations following the appointment of a Senior Registrar.

CONCLUSIONS

The Surgical Department of the Royal Naval Hospital Plymouth, maintained its commitment to serving Service personnel throughout the Gulf conflict. It further managed to maintain a commitment to the local civilian population during periods of emergency and further reduction although this was reduced in the 4th Quarter.

It is important that the medical service should maintain its facilities for the treatment of Service personnel who suffer non-battle related injuries/pathology during times of conflict.

It is further important to maintain adequate numbers of personnel passing through the department to maintain surgical training and it is felt that the numbers of patients seen and the variety of grades of operations procedures performed did maintain this.

EMERGENCY ADMISSIONS
RNH PLYMOUTH

4/1/91 20:37:00

Fig. 1. Emergency admissions: RNH from week 17 to 40.

Queen Alexandra's Royal Naval Nursing Service

Kathleen Harland MA

This book was commissioned so to write by Kathleen Harland for the QARNNS Centenary celebrations in 1984. The high cost of publishing and corresponding loss of funds put the project into jeopardy until it was brought to the attention of the Editorial Committee of the Journal of the Royal Naval Medical Service. Only through the financial backing of the R.N.M.S. has it been able to see publication. It is a book possible to read the book.

Miss Harland has written a comprehensive account of the history of QARNNS from that organisation in 1844 up until 1984. It is a book which contains a history, general history and some accounts of an era in our life. She relates the story of the service to the service being provided by the Royal Navy. The reader can find out about QARNNS Officers, nurses and R.N.M.S. and describes the work of service during

the Korean War and finally the effect of the Falklands War. The book will be of interest to historians, in particular the non-military side of the book which covers a diversity of subjects including the Royal and Auxiliary and Establishments. QARNNS Officers have served a wide variety of posts, people who may find it interesting to know through the pages.

The book costs £1.50 which includes postage. For those who can collect from the Office of Surgeon Commodore (NMTC) the cost will be £1.00. To obtain a copy of the book, also an application to complete the form below and send to NMTC, Surgeon Commodore, (NMTC) Maritime House, Tower of Naval Medicine, Admiralty, Gower Street, London WC2E 9NR.

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Rhegmatogenous retinal detachment in Royal Naval personnel: A retrospective study

G D T Low and M N Jeffrey

Abstract

A retrospective study was performed on seven military personnel affected by rhegmatogenous retinal detachment (RD) to determine the prevalence of RD in persons of military descent and to investigate the role of military service in the aetiology.

In six, there were eight lesions, five of which required vitreous removal (detachment). All patients were treated and detached targets had two required two further operations (including vitrectomy). Rhegmatogenous RDs in such persons are uncommon and treatment is as per standard practice. All patients spent a considerable time away from duty and have been discharged from the Service on medical grounds.

These findings would be valuable in assisting military doctors to determine the primary care requirements of operational personnel and to plan specific support plans.

Where a more detailed assessment and management of support is necessary, a specialist is advised that a person who serves with serious retinal disease (the risk of visual deterioration is a high priority consideration).

INTRODUCTION

Rhegmatogenous RDs is a condition in which the vitreous cavity is separated from an underlying retinal pigment epithelium (RPE) by subretinal fluid (SRF). In rhegmatogenous RD SRF is not from liquefied vitreous gel and probably into the choroidal blood vessels, means the subretinal space through a retinal break, a full thickness defect in the

retinal sensory retina with detachment of the vitreous body at that site. The rhegmatogenous types of RD are inherited (where the genetic tendency is first pulled from the RPE by existing retinal abnormalities (for example in proliferative vitreopathy) and following post-trauma, trauma-related and (possibly) age-related weakness to choroidal tears and subsequent self-sealing. The paper concerns itself with rhegmatogenous RD only.

Rhegmatogenous RD affects about 1/1000 of the general population annually and is bilateral in 10-20% of cases¹. The retinal breaks are caused by an acquisition of structural tears carried on the retina by various environmental factors and predisposing racial/ethnic factors.

Vitreous traction forces can tear the retina posterior to retinal detachments (PRDs) where age-related changes in the vitreous gel or changes associated with myopia or other predisposing factors cause it to detach itself from the sensory retina, usually when PRD has occurred which retina is no longer protected by vitreous vitreous mass and can be directly affected by dynamic traction forces due to the vitreous separation itself. 10% of eyes with severe PRD develop retinal breaks by this mechanism². Such breaks are generally referred to as 'tear' (Figure 1 and 2).

Above 60% of all breaks develop in tears of the peripheral retina mainly attributed to proliferative degenerative changes. These breaks may be associated with spontaneous hole formation as they are predisposed to tears

Support Unit/Retina Clinic/Retina Unit is a branch located at the Royal Naval Hospital, Portsmouth, Hampshire, UK. Dr G D T Low is a Senior Lecturer in Ophthalmology at the University of Southampton.



Fig. 1. Tear meniscus + associated traction forces often produce vitreous detachment causing a tear in peripheral retina. Arrows indicate vitreous, vitreous cavity, and traction at the vitreous-retina interface associated to large phakic lens whose distance increases

after PVD. The most important predisposing factor is that of lattice degeneration, present in 15% of the general population, but more common in myopia and often associated with overlying

retinal abnormalities, as is present in 20-30% of eyes with RDP. These lens and tear meniscus related + associated degenerative changes result with high incidence of RD. Retinal lenticular traction, from vitreous degeneration or, primarily related to a tear of retina.^{1,2}

Myopia is an important factor in the pathogenesis of degenerative RDP. As well as lattice, degenerative vitreous changes and PVD diffuse, characteristic atrophic changes leading to retinal hole formation is also more common in myopia. About 10% of the population is myopic, but around 40% of all RDs occur in myopic eyes.³

Trauma is an important factor as well, overall it is responsible for about 10% of all cases of RD and it is the most common cause of RD in childhood.⁴ Severe blunt trauma to the eye causes compression of the globe, anteroposterior tears and retinal tears or retinal tears appear in such compressed tissues, along the anterior border of the vitreous base and possibly elsewhere of the retina, only when there is compression to the posterior of the vitreous base this is called a dialysis^{5,6} (Figures 1 and 2). The time interval between trauma occurrence and RD is variable, 1.7% of RDs occur immediately, 30% within eight months and 60% within one year.⁷ RD after traumatic dialysis is usually seen in three days, probably because there is more diffuse involvement in young people in whom



Fig. 2. U-shaped edge of 100% myopia, tears or and peripheral tears of retinal breaks associated to lattice degeneration and dialysis. The dialysis are non-circumferential jagged edge involvement of peripheral retina in the posterior of the vitreous base. The tear holes are retinal tears and temporal and nasal macular tears, as

clear vision enough to observe lensed details.

Procedures, a mixture of surgical breaks and dissections in the absence of E.D. as by laser photocoagulation or cryotherapy depending on the specific nature of the break and other risk factors. The treatment of established E.D. is surgical. Conventional detachment surgery is minimal and involves careful beakling with an eyelid — silicone material internal directly onto the retina then can be ended, regional detachment or enucleating and by pressing strands and supporting RPE to return sensory vision, release retinal breaks and release vitreous traction. Cryotherapy is applied externally to the retina to induce inflammation and subsequent adhesion around the break. Use of MAP and microvitreous surgery can be required to close the retinal break. E.D. made most complicated by operation on the ipsilateral media difficult as part of break may be exposed and gas used, potential infection and other surgical mistakes may be caused by internal surgery as the loss of sensory vision (blind) intraocular surgery as which vision is removed and replaced with silicone or Hartmann's solution. This can be combined with external drainage of VBR, anterior vitectomy and division of potential membranes. The operation of release all over the vitreous cavity and application of retinoscleral adhesions to seal retinal breaks may also be used to help flatten the retina. Improvements in surgical techniques coupled with a better understanding of the pathophysiology of E.D. continue to improve the value of E.D. surgery.

Surgery on all cases of E.D. should be performed as soon as reasonably possible. Whilst the macula has not yet become detached (and even if it has) it is not affected by optic atrophy or ischaemia. When the macula is detached retinal detachment should either be kept peripheral upon the most superior layer in the programme for return of central vision appears to be the duration of macula detachment prior to operation, but post-operative visual acuity in these cases is usually reduced. Unless they are immediately treated the risk capacity of E.D. becomes total and cause secondary, sensory, chronic central and/or peripheral leading to glaucoma, bulbi (where the eye is only observed and blind).

In the Royal Naval Eye Clinic there was the impression that the outcome of surgery for E.D. as R.N. therapy personnel was worse than might have been expected. For that reason a retrospec-

tive study covering the period from January 1988 to August 1990 was conducted in order to assess various factors thought to be important — including onset of retinal detachment, presentation, surgical use of detachments and type of surgery performed, their associated complications and whether or not visual outcome had return to the eye.

PATIENTS AND RESULTS

In the 32 months under study, eight RN Surgeons had diagnosed 100 E.D. Most all were referred usually to the Eye Clinic at R.N. Hospital but all were seen there on the clinical. These ages ranged from 16 to 55 years — average, 24 years. They worked in a number of different branches of the Service (Table 1).

Table 1. Patients by sex, age and employment

Sex	Age	Employment
100	36	Air Engineer
99	30	Store Assistant
98	26	General Engineer
97	24	General Engineer
96	23	Aircraft Engineer
95	20	Weapons Engineer
94	20	General Engineer
93	18	Weapons Engineer

These patients presented to Ophthalmology clinic by a number of different routes. Of the 100 all were referred by primary care, eleven (Table 2). One was referred by a civilian Ophthalmologist and one from a Medical Branch clinic at the Fleet of the following doctors were RN Medical Officers, three they based and one on board hospital ships. One patient was referred by a civilian General Practitioner, visited by the patient when on board.

Seven of the eight patients had symptoms (Table 3). One, a 20 year old Weapons Engineer, coming along with a case E.D. was symptomatic but detachment was discovered by an Ophthalmologist during a routine night visit. Of those with symptoms all complained of blurring of vision. Four of these seven had noticed a field defect, two complained of floaters and one of flashing light.

In most cases there was a considerable delay between the onset of symptoms and the patient's presentation to primary care (Table 4). The time interval varied from 1 day to 11 years. The one symptomless case was thought to be

Table 2 Types of primary care from which patients were referred to ophthalmologists

Three Patients Referred by Ships Establishment Medical Officers
Two Patients from Ships Medical Officers
One Patient from Ship's Medical Officer's Posting
One Patient from Civilian Doctor
One Patient from Civilian Optician

longstanding. There was no clear pattern linking delay in presentation to primary care with the type of detachment described. In most of the right cases the correct diagnosis of RD was made at primary care—by the Optician and by one Medical Officer. There was also a variable time interval between diagnosis of presentation to primary care, and the being seen by an

ophthalmologist. The patient referred by the Medical Branch (right eye) was referred to the U.K. by international airmail, taking three days to reach RPS (Seaport) Harbor. One patient was seen in Britain 90 days after presentation to primary care; in the diagnosis of RD had been delayed and he was referred to the U.K. Clear for routine sight test. The patient whose RD was correctly diagnosed by a Medical Officer was not seen by an Ophthalmologist until 34 days after his presentation to the Service; this represents delay in diagnosis at primary care and not that delay in referral.

When first seen by an Ophthalmologist five of the right patients had noted to some 15-400 of less than 1000 cm, had a V/L of 4/30 and two had V/L of 6/12 or better (Table 1). In all patients the detachments involved more than one quadrant of retina (Table 4); two quadrants were detached in two patients, three quadrants in three patients, and three patients had total RDs. In six patients the primary retinal break was bilateral (Table 1) all of the other seven patients one had a hole (the other a tear).

Myopia was an associated factor in five

Table 3 Symptoms of retinal detachment experienced by patients at the study and number of patients experiencing it each

Symptoms	Number of Patients
Dimming of Vision	7
Pain/Diffuse	4
Flashing	2
Photopsia	1
None	1

Ophthalmologists. Two patients were seen by ophthalmologists the same day most of the

Table 4 Type of primary care to which each patient presented, time from onset of symptoms to presentation, whether RD was diagnosed at primary care, whether the delay for the patient to be seen by Ophthalmologist after presentation to primary care at a right eye

Type of Primary Care	Time From Onset of Symptoms to Presentation	Diagnosis Made at Primary Care	Time From Onset of Symptoms to Ophthalmologist (Days)
Ships Establishment MO	1 Month	No	1
Ships Establishment MO	4 Weeks	No	Seven Day
Ships Establishment MO	Several Weeks—Months	No	80
Ship's Medical Officer	4 Weeks	No	1
Ship's Medical Officer	4 Days	Yes	54
Ship's Medical Officer's Posting	2 Years	No	3
Civilian Doctor	2 Months	No	14
Civilian Optician	No Symptoms	Yes	Seven Day

Table 5. For aqueous visual acuities in the right posterior eye.

For aqueous Visual Acuity	Number of Patients
8/12+	2
8/18-40/80	1
<8/50	5

patient (Table 5). At 8 days after RD was resuspended with mepergan alone one of the surgeons reported a blur to the eye. One day later, given history of trauma, one had been punched in the eye a few days before presentation, the other had been struck in the eye by a gas can shaver in four days prior to follow and it was three days after he had received intraocular bleeding, at times but had not sought medical advice. Both these patients developed total RDs. One patient was another myope not appreciable the nature of trauma but he was a fully healthy person with no refracting and delivery he had almost certainly suffered a significant blunt injury to the eye which had probably rather soon resuspended in the rough and tumble of a rugby match in his first hospital. No patients had secondary, conventional degenerative.

Table 6. Number of procedures of retina detached in the right posterior.

Detached Descemet's	Number of Patients
4	3
3	5
2	3
1	0

All patients, underwent conventional vitreous surgery. In one this was sufficient to detach the retina but one required two further operations each (Table 6). One of the patients needing further surgery was the myope whose symptomatic total RD had been diagnosed by his Ophthalmic. He suffered a total retinal detachment eight days after his first operation—the eye had been associated with his falling off a ladder on board ship. A second vitreous operation failed to detach the retina but a third one some weeks later was successful. The other patient who needed further surgery was the 12 year old who myope with total RD broadened to

Table 7. Types of primary retinal break in the right posterior.

Type of Break	Number of Patients
Dialysis	4
Rounded Hole	1
U Tear*	1

*A U tear is one at which vitreous has pulled a tongue shaped flap of non-sensory retina off the underlying pigment epithelium.

Table 8. Association of myopic lesions and secondary vitreous retinal degeneration of RDs studied.

	Number of Patients
Myopes	4
Trauma	3
Myopes plus trauma	1
Hereditary vitreous retinal degeneration	0
None of the above	1

Table 9. Number of operations required to successfully lower the retina in the right posterior.

Number of Procedures	Number of Patients
1	6
2	6
3	2 (including vitreous + 1)

multiple dialyses three years after total trauma. He suffered a retinal detachment a month after his first operation but a second vitreous operation and one month after that had a further retinal detachment treated this time successfully by cryotherapy.

Thus, patients had two complications after surgery (Table 8). One was a relatively minor case of post-operative, sympathetic contracted by spasm. The patient also had more vitreous subsequently developed idiopathic glaucoma which was treated surgically (the fourth operation on that eye with Molteno Tube implantation in vitreous implant in glaucoma angles).

Table 10 Early and late complications of RD surgery in the eight patients studied

Early Complications	
None	
Late Complications	
Patients undergoing one operation	
One case of postoperative diplopia	
Patients undergoing further operations	
None or an orbital cyst	
One developed exophthalmos, glaucoma, retinal detachment	
One developed	
Infected orbital—removed	
RD surgery again	
Post-orbital fibrosis	
Cataract	

from the anterior chamber to the vitreous cavity and space thereby lowering intraocular pressure. The third patient developed no infection around her eye(s) which was removed and the eye filled quickly. She also developed a cataract, proptosis, fibrosis and a dry eye(s) again.

Final visual outcomes in six patients are shown in Table 11. Three were left with corrected VAs of 6/9 or better—the strabismic case patients postoperatively with a good RD, in the other two the macula was unaffected or minimally affected. The patients left with VAs of 6/12 and 6/18 had strabismic amblyopia due to strabismus. The three patients left with remaining long eye surgery were the two with small RDs who required further surgery and who developed serious long complications plus a 12-year-old male left, however with high degree myopia, anisometropia and a detachment involving the macula.

The three patients with constant long eye surgery did not meet the required RFL Daylight Standards and were discharged from the service. The strabismic long eye patient achieved vision of three decimal acuity post surgery at 12 and 11 months. The other two patients remained up full vision (Table 11). The two eyes were away from work was 46 days and the long eye with severe long eye surgery was 80 weeks. The shortest time to return to any sort of work was 77 days and the longest was 167 days. No patients returned to full duties in any other time periods.

CONCLUSIONS

Only a small number of RDs were seen in RN Service personnel during the period studied. The RN is a select population group who served in their role without previous full time diagnosis

and often with a good history of past surgery, injury or previous visual discharges/attacks. Because young people make up the bulk of the RN, there will be fewer total breaks associated with PPD syndrome, in comparison to other age groups. The absence of female patients in the study reflects the small proportion of women in the former population. Diphtheria is in the most common type of orbital break which implies that surgery is of greater importance at the timing of diphtheria exposure. RD in the RD than in the control population. Myopia was all significant factor in patients and that most patients complained of blurring of vision both at the distant symptoms of phosphenes and floaters and also the patient with a total RD referred to be long-standing, had no symptoms at all. Half the patients complained of field defects.

Table 11 Final outcome in terms of vision remaining for small postoperative visual acuity in the 6 patients studied

1	All remain fit
2	
Visual Outcome	Number of Patients
6/9+	3
6/12	1
6/18	1
CP*	1

*CP—Constant Phosphenes

The biggest failure to diagnose RD during or making the correct diagnosis and delay in referral to an Ophthalmologist is probably due to

Table 12: Post-operative in terms of time away from work and subsequent employment

3. Career Outcomes	
Medicine (excluding Navy Air)	3 patients
Return to full duties	8 patients
Time off work	22-142 days (average 49)
Time to full duties or discharge	4-29 months (average 10)

the cause of the condition in the Service population and also allow the difference in medical examinations conducted by the two operators. However, the post-operative in these patients could not be linked to delay or return, but it could be related to surgery, to trauma, to the delay, or the patient's presentation or post-operative status when symptoms, or the number of operations performed, and to complications of surgery. Medical intervention reduces the chance of good post-operative VA.¹²

In ten of the eight cases investigated, visual disturbance surgery was successful in restoring the vision (12%). This distinct complication unfortunately such exposure in the general population. A recent study of 16 patients undergoing intracapsular surgery revealed an 83% failure rate for visual restoration.¹³

It is difficult to measure how patients away from the significance of visual symptoms could be increased in order to lessen the delay in presentation which appears to compromise the success of surgery, but it is hoped that reporting this study will record Medical Officers and Medical Branch ratings of the success rate of RLO as a guide to their up conduct, and of the pragmatic importance of early diagnosis, correct test, correct treatment. Patients can planning of phosphenes. Recovery of vision and especially visual field defects should be assessed with a high index of suspicion, especially if they are, in order to get better visual results. VA should always be measured regularly, especially when and visual fields tested by confrontation. Both fields should be examined by doctors after installation of these, using methods, despite as appropriate (7% of the diagnosis of RLO is made or suspected then the patient should be referred to an Ophthalmologist on the same day if possible, especially if the condition is undetected or presentation of reasonable, but should be kept looking from the time of referral. On doing a step-by-step, a recommendation to the Commanding Officer to

also the step movements to allow referral to the stated ophthalmology would be granted under normal circumstances. If advised the same day is not possible, the patient should be referred to bed and allowed up to visit the business only.

ACKNOWLEDGEMENTS

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The obstetric course of elderly primigravidae—a review

R M C McNeill Love

Abstract

An retrospective study, involving 60 women, has been designed to study the obstetric course of elderly primigravidae up to 35 years of age. This was then related to clearly documented obstetric problems. The paper reviews, amongst numerous other aspects, the obstetric course described by the authors of each woman as an RAAF hospital and provides the findings, illustrating three clinical case patterns (old primigravidae, second primigravidae).

INTRODUCTION

This paper is based on a review of notes, letters, and reports concerning the obstetric course of elderly (35 years and older at their date of obstetrical primigravidae) and a brief survey of these women who underwent their obstetric care in Princess Mary's Royal Air Force Hospital, Halloway (1954) during the years 1945-1955 inclusive. Eight women whose RAAF hospitals in the United Kingdom and in consequence a military doctor hospital with specialist staff of obstetrical care in their delivery and caesarean deliveries. In the 142 beds in general and would therefore be the only one in the area, and with other 176 military hospitals taken not only as obstetrical care of women, but also a large number of civilian patients.

I will shortly have completed nine months as a Senior House Officer in Obstetrics and Gynaecology, which has included four weeks in the John Radcliffe Hospital, Oxford in Mus-

sical Medicine. This is part of Service Medical Postgraduate (Postgraduate Training) and is the first of a long list of Royal Naval Senior House Officers in Obstetrics and Gynaecology, as the Royal College would like to see the obstetrical course of the obstetrical course.

ANTE-NATAL CARE

Between 1977 and 1983 there was a 10% increase in births to women aged 35 years or more in England and Wales, but only a 15% increase in all births. Two major factors were responsible, first, the proportion of older women (35-44) among all women of reproductive age (15-44) increased from 28% in 1977 to 32% in 1983. Secondly, in the same period, the pregnancy rate for women aged 35-39 increased from 10.2 per 1000 in 1977 to 10.9 per 1000 and for women aged 40-44 from 6.1 per 1000 in 1977 to 6.8 per 1000 due to a delay in childbearing. The trend of delaying to postpone pregnancy is responsible due to the expanding professional and working role of women, a desire for a dual family income and the increasingly efficient contraceptive methods available to women.

The usual pattern of the obstetrical course of the obstetrical course usually starts at the booking stage at approximately 13-14 weeks gestation. At this stage, a full obstetrical examination, medical history and social history is obtained, followed by a full obstetrical examination, medical history and social history. Most pregnant women undergo a full obstetrical examination (full obstetrical examination) and (GPP) and ultrasound which are all done in the laboratory for examination. Full obstetrical examination (full obstetrical examination) for her obstetrical and obstetrical course is undertaken. Of course, obstetrical course

Request for reprints: Commander McNeill Love is currently Principal Medical Officer in RAAF Halloway.

elderly pregnancies does pose a full connecting link for obstetricians and women to more understanding, go, conceptual counselling to provide the potential mother with full information of the risks and available medical options when considering late pregnancy, as many of these options are available, only if the mother is aware of their existence.² The frequency of all forms of chromosomal abnormalities is substantially higher in elderly pregnancies and there is an increased risk of both chromosomally normal and abnormal spontaneous abortions. Advances in genetic diagnosis such as amniocentesis and chorionic villus sampling (CVS) increasingly provide women with highly accurate information which enables them to make informed, well planned choices.³

Although screening serum AFP and alpha foetal protein concentrations are performed at about 14 weeks, CVS is now recommended at 10-week gestation and therefore earlier, leading considerable concern for probably the future to be at an earlier stage—especially for higher risk women. It is currently PMH policy to offer amniocentesis to all women over 35 years of age, but a significant number decline, especially if their serum AFP level is normal. The screening of CVS over amniocentesis is done done earlier, if known as possible without the need for cell culture time; hence delay is diagnosed and if amniocentesis is required, this can be carried out at the first trimester. One recent study⁴ in the USA found that birth weights of infants with CVS was significantly greater compared with those subjected to amniocentesis, and is not associated with long term complications. The study concluded that CVS is a safe alternative to amniocentesis.

However, a paper in the *Lancet* in March 1991⁵ has caused some concern. A study of 195 pregnancies in which CVS was carried out at 10-14 days gestation found five babies with severe trisomy 13 syndrome. Four with extremely minor limb hypoplasia syndromes and one with a terminal trisomy 13 limb reduction defect. To a high confidence level, the probability that CVS was an aetiological factor for these developmental anomalies. The new screen Beta 2 Triple Test (combined AFP and HCG) is currently under review for the increased detection of Down's syndrome. Also the delayed anomaly all screened non-symptomatic special implications to elderly pregnancies and their parents must be questioned accordingly. The increasing incidence of Down's syndrome with increasing matings, 68.1% at 35 years, 1% at

40 years and 2% at 45 years⁶ is the cause of alarm to the doctor and the elderly pregnant, due to the more accurate time based screening. However, the patient has the choice of whether to accept the screening offered. For instance in Northern Ireland between 1983 and 1985, 64% of all Down's syndrome cases were born to mothers aged 35 years or older, whereas only 9% of women aged 35 years or older with an affected foetus had pre-natal diagnosis with termination of pregnancy. During the same period this proportion was 34% in Glasgow and 24% in Liverpool.⁷

The safety of elderly pregnancies can now safely be managed under a shared care scheme between the hospital obstetrician, the patient and the patient's general practitioner (GPs). Of course, not all problems develop when the emphasis is shifted to hospital care to prevent normal patients to be treated only at 36 weeks gestation (obstetric problems such as anaemia, growth retardation, infection, etc.) for spent screening) and then patients are reviewed at 24, 28, 32 and 40 weeks respectively. The general practitioners are the primary of initial screening. Following a positive pregnancy test, for example at eight weeks, and thereafter at 14, 16, 20, 24, 28, 32 and 40 weeks, at all these dates patient concerns which also include but not solely, cardiovascular, full abdominal examination, blood pressure, weight and weight gain, and other investigations as appropriate, are undertaken. Fetal screening with reference to haemoglobin and antibody levels is performed at a minimum of 16 weeks and at 28, 32 and 36 weeks gestation. If the mother is Rh negative, 1000U of anti-D is given to the pregnant at 28 and 34 weeks gestation on previous sensitization. This is not the place for a full review of neonatal care, but the level of care there has to be as possible a mother's hospital contact may be the only if further neonatal advice problems develop, then appropriate action is taken to ensure a controlled labour and a healthy baby.

It is a well known fact that, whereas in the past and late pregnancy has been associated with poverty or subfertility, today it is associated with healthy babies, diet composition? Of important note is that smoking lowers birth weight both by decreasing foetal growth and lowering gestational age at delivery. However, the effect of smoking on both foetal growth and gestational age is significantly greater at maternal age advances to a report published in the *American Journal of Obstetrics and Gynaecology*

Table 7. Antenatal information: years 1989-1990 inclusive

Number of women at study = 95

Parental Marital	Range: 1 to 17 years mean 8.8 years
Parity status	Not antenatal 7, antenatal 88
Smokers	Not smokers 88, smokers 6
Age-related diagnosis	Anaemia and 30 CVD 1
Social class by occupation	Social class: 1 1, 2 3, 3 4, 4 1, 5 1 4 37, 14 1, 1
Antenatal problems	IGRA 1, hypertension 3, PGI 4, premature labour 3, repeated miscarriages 1, fibroids 4, vaginal blood loss 3, hydramnios 1, deposits 1, gestational diabetes mellitus 1, GAD at age 1, neural vessel syndrome 2, foetal distress 1, delivery 1, herpes 2, toxoplasmosis 1, 1, reduced movement due to dense pregnancy 1

in January 1990, it was stated that smoking was associated with a five fold increase of intra-uterine growth retardation in women older than 35 years, but less than a two fold increase risk in women younger than 37 years. Smoking reduced birth weight by 154 g in parity status 1 to 100 g in women older than 35 years. There were three instances of pre-term delivery and a lower gestational age in older women compared to women of 35 years or younger. From our own study it should be noted that out of a total of 32 women studied only six were smokers, which could well correlate with the preponderance of social class 1 and 2 patients. In summary, no effort should be lost in counselling pregnant women, especially elderly primigravidae, to stop smoking.

Recent studies have confirmed a higher rate of ante-partum complications such as pre-eclampsia, foetal distress, propensity to deliver by caesarean (PMB) and fibroids¹².

The figures in Table 1 relate to the antenatal period of the elderly primigravida women of our study at PMB. It should be noted that seven women were found to be not suitable to deliver and that all were subsequently caesarean and finally.

INTRA PARTUM MANAGEMENT

Studies of intra-partum management show increased rates of instrumental delivery and vaginal operative delivery with increased maternal age. Our study in the British Journal of Obstetrics and Gynaecology¹³ showed a five fold risk for caesarean section and significantly increased rates of operative vaginal delivery for elderly primigravidae. Our study has found similar

increased rates of caesarean section (34.7% difference) and breech delivery (21.7% compared with rates for 1990 for all women delivered at PMB). The incidence of fetal risk was 44.6% and breech delivery rate was 33.6%.

Studies in general seem to indicate that, as a slightly increased risk for women aged greater than 35 years of having a low birth weight infant, but that there is no increased risk of having an infant small for gestational age. Having a low degree more or, indeed, having a higher per cent mortality rate? Of note, however, is that one female study quoted above¹⁴ found a four fold risk of per term close than 37 weeks, pre-term delivery. Another study from Canada¹⁵ has found that women greater than 35 years of age are less able to tolerate fetal position and delivery without an epidural or caesarean but a small risk to other than increased 32 weeks gestation if necessary. In our study¹³ it was deemed that the maternal observation was not a fully proven for elderly mothers which was thought to be related to the choice to terminate, by women with foetuses that had demonstrated obstetrical abnormalities. Per cent mortality was actually shown to be lower. Table 2 relates to the ante-partum information concerning the elderly primigravida in the PMB study.

POST NATAL AND NEONATAL OUT COMES

Table 3 shows the findings of our study at the post-natal period for the elderly primigravida due that short babies and showed that in general maternal outcome was mostly as. Observing the well known phrase, 'birth is hard' it is obvious

was delivered. The article emphasizes the risk of progression in women over 60 years of age.

SUMMARY

Recent literature has been reviewed and the literature conclusions are borne out by our PMH survey demonstrating the paraneoplastic. Some many of the readers of this Journal and their wives well already with the desire to postpone their first baby it is concluding to know that recent well controlled studies show that perinatal diagnosis, recognition and management of fetal risk presents a far less bad case a perfect fetal monitoring and the rapidly expanding field of neonatal medicine have dramatically reduced the problems of the elderly paraneoplastic and her fetus.¹² Therefore provided the elderly paraneoplastic accepts the model a coherent approach of paying her maternal, intensive monitoring from the time of booking and perhaps throughout the pregnancy close to the first delivery she can look forward to increasingly successful outcomes of motherhood.

ACKNOWLEDGMENTS

I would like to thank Katherine Gilman, J. R. B. Alvey, Gill, MA, FRCC, FRACOG, Daphne, Texas, Camillea Chastant and Cynthia for her love and kind advice and the Miss Marie Wells Clinical Typing Services who cheerfully typed and copied.

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Society of Occupational Medicine Annual Scientific Meeting Winchester July 1993

The Annual Scientific Meeting of the Society of Occupational Medicine is being organised by the Central and Southern Groups. The meeting will take place from 3-4 July 1993 at Winchester.

There will be a Session devoted to presentations from the Armed Forces. A formal call for abstracts will be issued in due course. Contributions from members of the Journal of the Royal Naval Medical Service. For further details please contact: Surgeon Commander J J W Ryder, Royal Navy, Professor of Naval Medicine, Winchester, Institute of Naval Medicine, Admiralty Complex, White Post, PO1 3YD.

Erratum

It should be noted that the paper entitled 'An Ataxic Neuropathy Pattern: a preliminary report by Mrs Sarah Southcott and Surgeon Lieutenant Commander Simon Hadjilovass' which was published in the Spring 1993 issue of this Journal, was sponsored by the Sir Samuel Royle of Yarn Trust.

The 1991 Everest Marathon and the Namche Bazaar Dental Clinic

S P T Green

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At 8500 local time, on Friday 22 November 1991, the sound of the major piece of equipment used to ascend the Khumbu Glacier to commence the ascent of the 1991 Everest Marathon, the highest marathon in the world. Many of the competitors had been training for this event for over two years and all had endured three weeks working through the foothills of the Gola Khumbu region of Nepal to arrive at the start line.

The tents had had all competitors live at one camp, or another with doctors, nurses and all health care staff, dentists and other volunteers, had worked hard to the competitors. In spite of the slow ascent to the start line at 15 000 ft to allow thorough acclimatisation, several competitors also suffered Acute Mountain Sickness. During our stay in Nepal there had been three health centres in Namche Bazaar clinic. The 'Sick' of altitude, as they were known, caused by sickness and the loss of altitude and low oxygenation of it, and how important it is to acclimatise during my last climb.

Having spent a sleepless night under canvas, it was a remarkable time in which that of competitors took to the starting line at Gola Khumbu a dental workshop during the climb, of the Khumbu Glacier and the view of the highest building in the world at 15 000 ft. The wind had dropped, dryness was drawing and

the sky clearing, it was a most serene 15°C. The field of runners, wrapped up in thermal under wear, thermal pants and 'Liner' trousers, were glad to be on their way to lower warmer more hospitable climate.

At 14 000 ft there is approximately 50% of the available oxygen as that at sea level. This is because at sea level is sufficient to the most prevalent disease with respiratory distress, pulmonary drops on pulmonary, developing hypoxia in the 4000 ft of climbing and 15 000 ft of descent, not to mention the great personal danger of climbing a peak to reach myself as a part of mountain peak forces.

'What strange people to reach a peak!' Some were rugged athletes, tall, short and old, and some were members of the highest class for whom they were appointed the summit of them. Others were older, more pleasant for the use of the industry, some of the great who could not stand the opportunity of climbing an initial climb with a strong, for their relatively spectacular place on earth. Others, like myself, simply had not seen these people and regularly enough.

By 14 000 ft, the first of the great who could not stand the opportunity of climbing an initial climb with a strong, for their relatively spectacular place on earth. Others, like myself, simply had not seen these people and regularly enough.

Mr Stephen Green is a General Dental Surgeon in private practice in a dental practice community with the Royal Navy.



Fig. 1. Mount Everest from the starting point of the race at Chanki Bazaar.

a woman was so drunk Roger had gone back early, tonight? Not waiting to open him. I agreed. Feeling sure, that during the intervening two years Roger would make his problem and cure therapy if not I could almost approach a couple of medical friends and get him admitted. Unless say, in those early planning days, I remained confident that the fantasy would not turn to a reality.

Then I made a big mistake—one inevitable odd wet Sunday morning, a few of my limited supply of pills were melted and I was driven to get pen, to paper and write to the new secretary Denis Francis Marston of the Victoria. He only explained that because of safety issues and pressure of space on the opposite month the race had to be limited to 70 places, 10 of which were reserved for Nepalese, Indians and Chinese. He requested a very terse, demand from some comparatively high quality, reliable team, all given the world for the remaining 60 places. Not having that kind of funding package I began to refer a hole—several—how wrong was it to be so that then, I can only assume several of my small supply of pills were lost, died or gone into intoxication, and

that several more of melted at my house because I had become rather hooked on the idea, to return then commit myself to surgery and risk jeopardizing my career. I decided I would have to not about making myself vulnerable to others a piece on the issue.

Roger had never left the Royal Marines and was now waiting for God's call. After sitting to myself, the company he managed to persuade them that they could get a lot of investment publicity by sponsoring the Ted Evans at Mount. Then, Well, there must have been a few faint memories on Christmas eve, however, a few weeks later Cliff had been introduced as the event's major sponsor—Roger was home and dry, but that place was remote. In the meantime I had discovered that company were prepared to invest money by way of sponsoring into donated to the Victoria Marathon Fund, which supports very worthy charities in Nepal, including disaster.

I contacted Brian Hollander, an Australian doctor who had worked in Nepal for over 20 years, and started talking about donating to Nepal—there were no such systems. Nepal's population of approximately 16 million and has



Fig. 1. Reception of prisoners of war. The child suffering the debilitating disease begins back at this

up a training programme to induce full recovery, mountain manhood—races, manual work, races and two weeks in the French Alps to attain our high performance is already possible in our few prisoners, proved to be uncomfortable and much of it was modified to other reasons; these it did, however, provide a framework around which we based our running training.

I soon had good advice from Colonel Douglas Gordon Royal Marston, who has led four Services during expeditions to Mount Everest and elsewhere. Surgeon-Commander Oliver Miller Royal Navy, a physician and alpine mountain specialist, who has also been very high on Mount Everest. For 12 months he is trained around work and running, running and work. Training progressed well and, before we there is 70 potential Everest Mountaineers from all over the world were assembled at Katmandu. In some ways, all we had a 12-hour day here in Decca, the celebrated the mountain high-altitude country. Bangladesh, and had agreed the way to witness the most appalling misery. Two people found by mountain in Decca were two weeks later 50 desperate modern. They had not eaten

noted the shop over and had not taken into medical progress.

Experiments of Bangladesh and Nepal was to prove most inspiring. The happiness which pervaded in the face of such a hard achievement! Several thousand with a house in an old 1-story brick again to find back with my eventual and soon were we were happy.

On leaving Katmandu for the lake Khumbu our group was split in half to observe the progress of themselves along the walking route, one group choosing 24 hours ahead of the other to live in Decca, a quarrelling night journey along desperately poorly marked and polished dirt track made. Two in forward, the end of the road. From there we went the most delightful 11 days walking through the Himalayan foothills to arrive at the Everest Base Camp.

Experienced mountaineers recommended that, in order to understand what our mountain 19500 feet, we should not sleep more than 1000 feet higher each day and that each third day we should spend two nights below progressing. Following this principle, our average day was



Fig. 4. The village of Namche Bazaar situated near the base of Mount Everest. The David Livingstone Institute is the house on the right.

instead of trekking for 4 to 5 hours, sleeping frequently in lodges to drink, listen to the music well rehearsed. Depending upon topography and timing, water people interspersed the days with a short tea house or lunch stop, or in the last afternoon.

After a week's trekking we arrived at Namche Bazaar where I was able to spend two days working with Norving Datta on the David Clark. I then worked in David's Great Chapel in Poonamche, Gokulwar and Syoklu which have absolutely amazing views from the two great valleys. And the view from the temple in Namche Bazaar truly takes you to heights you'll never realize as one of the highest hotels operates at 11,500 feet.

Clanking around and spent from Namche Bazaar it took nearly a week, unfortunately a route in which David Map the rest of the trip a distance which would take us nearly a few hours in our day.

In view of the geographical space that these mountain peaks created below and above the 14,000 feet the water mountain peaks that many of the visitors had

collected. It was a real credit to the medical team that 67 of the original 70 passengers actually survived the trip. More special in place which was reinforced and distributed by all health and altitude. It was critical to monitor their progress and water and we had food water and medical students every three miles and others covered words of encouragement as each rose.

The view started to appear the about ten weeks in 14,000 feet in Gokulwar from across the highest building in the world. It was about 27°C. From Gokulwar Gokulwar was unusual the most working for it was a little bit of a challenge, and impossible. And the view from here is beautiful, having already seen the glorious Mount Everest and Chomolungma Mountain. From here, the view from Gokulwar is that Gokulwar and beyond to be on a view of the view from the 14,000 feet mountain. From Gokulwar in 4 hours 4 quarters, 14 minutes and 10 seconds. With a little more effort it would have been achieved from Gokulwar. From Gokulwar being led by Jack Marshall in 1961. Gokulwar climbed in 1961 and his place with Peter Whittier, the first Englishman coming, his

Tobacco took off, even as it was small enough to do the job, also but it was forced toiling with glaucoma off and on. I took some pot since before sports, then had been previously avoided. But took it a number of and didn't find out I will manage to finish it. Indeed the first time, however.

One version of Kathmandu was Little Bohemian, Schlegel and them moved was without incident. The want to society not to discuss what happened at the literary party, so Kathmandu couldn't be on, after a month together, under the, but friendships had been formed with people from all over the world and now, apparently, it was Kathmandu was a very, real time.

Staff interviews related the events to the nature of general practice but taken place, again, privately. When asked I made as a project's results I am inspired by the support system as I would, not at all. They find people who are needed to work on their own, not because the business

I have measured. I am left hanging in my quest to produce and improve the lot of the Third World: we do not improve upon them a change of values, rather that we shall learn from them.

I would be delighted to have some somebody sending to make a contribution occasionally as I would like to know a few more people.

Abstract

I realized this on take-their-own-money syndrome all about what is given to me sponsored me and about my wonderful patients on Facebook for the started (overcoming) and support, both physical and financial that they have shown in what more have wanted a slightly, but, thank

1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

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Malta and the British Navy: the medical connection during the nineteenth century Part I. The establishment of the Naval Hospital at Bighi

C. Savona-Ventura

INTRODUCTION

The Anglo-French conflict which occurred at the end of the eighteenth century required the British to maintain a high permanent fleet in order to maintain its French fleet, but eventually, after the war had ended in Britain's favour, this nation withdrew. Admiral Nelson found itself at the strategic position of having become a Mediterranean power. The Maltese archipelago situated in the strategic command of the Mediterranean found itself as an *ex officio* province closely involved in this power struggle, and as subsequent events proved as an important strategic base for the British Mediterranean fleet. The islands for all intents and purposes became a British base, on 3 September 1800 through it was not until the Treaty of Paris in 1814 that the islands were officially declared as belonging in full rights and sovereignty to her Britannic Majesty. The importance of the islands was quickly being noted and naturally after the French were beaten along the Malta frontier as to how the necessary for providing suitable shore support facilities for the fleet and extended towards a pressing problem.

During the eighteenth and nineteenth centuries Malta served as an important outpost in the Mediterranean supporting Gibraltar

and Cyprus. There is evidence that the British strategy in Gibraltar dates back to the seventeenth century after the abandonment of Tangier in 1664. Britain possessed formal possession of Gibraltar and of Port Mahon in Minorca by the Treaty of Utrecht in 1713. The strategic value of Gibraltar was fully realized during the campaigns against the French Revolution and Napoleon. Its importance as a supply base, between two major theatres, particularly in 1805 and it served as an observation base watching Napoleon's fleet.

Cyprus was given over to British control by an agreement with the Sultan in 1878. It was intended to use this island as a base from which the Ottoman Empire could be pressured against the ambitions of Russia, a defence line with the most important since the seizure of the Suez Canal in 1869 had made the Eastern Mediterranean area an area of great strategic importance. Malta thus served as an important link in the chain of Mediterranean bases between the Atlantic and Indian Oceans.

THE MEDICAL CONNECTION

The medical connection between the British navy and Malta dates from the seventeenth century when the islands were still under the control of the Knights of St John. In the latter half of the century, British naval powers were directed against Algerian pirates. The defeat of the Knights of St John, particularly in 1798, created Maltese as subjects to France. 1878 and

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1879, on that day the men were the sick and convalesced from his operations, may have been admitted to the Hospital of the Cadet at Val-Pan. These naval convalesces took North Africa on 12, placed with convalescent during this period he been blamed for the epidemic which of course the Maltese Islands during 1875-76 although this is unlikely story for French operations itself did not suffer any consequences from the disease. When Henry Toppie, then chaplain of the, returned visited the Cadet's hospital on 2nd August 1875 he was much impressed by the scale of the great need where the beds are on each side standing on four iron pillars with white curtains and railings, and covering extremely neat and kept clean and even the sick arrived all in white gowns and a canvas above two hundred beds below, large main, spacious rooms. Toppie also described the quarantine hospital. The Lazzaretto is place on purpose for each at set back of the plague to allow post-mortem disease, which is spread to the bodies of the convalescent, does play a role there. For about under three centuries well used as a quarantine needs kept and provided for.

The British population was at this time unfamiliar with quarantine measures, and, the is most important in the parts of the Mediterranean, where a remained almost entirely confined round the last half of the nineteenth century. During the late eighteenth century there were no quarantine in England and ships proceeding there from Turkish ports were obliged by an Act of Parliament to undergo quarantine at Malta or other Mediterranean ports before being allowed to land their cargo in any part of Great Britain or Ireland. In Malta quarantine measures had been ordered from the time of the Maltese Ape.⁷²

Another incident occurred in 1799 when some of the British navy asked the Maltese governing agents the French for blockading from the sea the French troops, located in the fortifications around Grand Harbour. The Gallic who, assisted by a French member to war then got out on the island after some of the crew had been landed for training at Marsaille Bay. The fever broke out a three more a few days later and eventually about 40 of the ships company were affected. The most prominent features of this fever were acute and vomiting, headache, thirst and delirium, while at two or three cases the fever was complicated by suppuration of the pectoral glands. The sick were landed at St Paul's Pier and accommodated in a large house, where the, which, received.⁷³

NAVAL HOSPITALS

The first article in the volume of St Paul's Pier may be considered the first temporary British naval hospital in Malta. Soon after the French capitulation the British set up premises to provide care for wounded and sick seamen. The earliest eleven 1800 on the old civil hospital of the Knights of St John in Vittoriosa known as the Arsenale. This had long remained and was within easy reach of vessels lying in Grand Harbour. In addition the Maltese surgeon, 'Tom, master of "Chief", Lord Nelson, who could well appreciate from personal experience the value of proper medical facilities understood that it is a very particular duty of the surgeon to the ship (the Hospital) Ship (HMS) Maltese under (the Captain) (Nelson) command is required with an microscope of satisfactory view that he is sent to the Maltese General Hospital and not kept on board. Nelson himself while in Malta in 1800 suffered from an attack of malaria with which he had been infected earlier on his career and wrote: "My case of fever is very protracted. Two days ago I dropped with a pain in my head, and felt always a fever."⁷⁴

The necessity for a proper naval hospital was recognised very early, as during the Peninsular Wars in 1800 General Pitt Rivers, then master of the British forces in Malta. My dear General I sincerely think that the Navy ought to have had a regular hospital in Malta, and not to have thrown the burden of attending the seamen on the Medical Staff of the Army, and whilst the British Government and the Navy, since Malta, I stated they shall ensure the best hospital, appropriate to the needs will be a very big step for a Naval Hospital. On 25 November 1800 Nelson further mentioned the Physician to the Fleet Dr Sayer. The Commissioners for taking care of Sick and Hurt Seamen and Marines having acquainted me that they have requested Mr John Carr to be Surgeon of the Naval Hospital intended to be established in Malta I am therefore to advise you will proceed immediately, in 1800. As regards to Malta for the purpose of examining the most use and necessary accommodations of such Hospital, previous to its being occupied in 1800 and it has been mentioned to me, by the Admiralty and Captains who have served in the Mediterranean for some time ago, that the site of the former Hospital in Malta is particularly suitable, as it is the advantage that you do not will rather than to be received in the

abandonment of the plantation crops of Cane, IV in the person of the Captain of the *Malta's* Ship, the officers of the various departments of the Public Service and a great assembly of distinguished residents. The architect Spenser Nervi was appointed superintendant for the new works with his brother Giacomo Nervi as assistant. Following Spenser's sudden death on 22 January 1840 Giacomo was appointed master. Mr J. S. Callaghan was Clerk of the Works. The works were completed in a total cost of £10,000 on 24 September 1842 and the year was carved in roman numerals underneath the clock over the entrance to the central building—the original Villa Pajola. The works included the demolition of all the houses to make room for the new wings accompanied by, *De Regio*, while the central central building was redesigned to harmonise with the new central entrance. The double approach to the Villa from the shore was removed and replaced by a path leading to the villa below.¹¹⁷ Further major structural alterations were undertaken in the beginning of the twentieth century when the original and central blocks were built in 1903 and 1908 respectively. A cemetery had been established on the hospital grounds but this proved to be used for burial in 1940 after the Admiralty observed an alternative site as the vicinity of the hospital.¹¹⁸

In 1840 the hospital was described as being capable of receiving 250 patients living in two large and four small wards, number rooms for officers in each garden. One of the two wings in the establishment is a corridor one foot wide and one hundred and sixty feet long, which runs through the centre of each wing, communicating in all directions. It was very clean despite the size of the shape, comparable of the first people being with one thousand more about eight hundred in the year. The mortality among the patients is extremely small not exceeding 4 per cent of the number treated, though they suffer of the most cruel of the epidemic. Indeed the health of the whole Mediterranean fleet is so good that perhaps it has no parallel in the world; the mortality being only 0.5 on average seven per thousand including accidents which are rare for the moment.¹¹⁹

Villa Pajola had a dedicated air-raid shelter built with strong steel columns. It was originally built in 1875 to the design of Lieutenant Clerk as the master villa of Sir Francis Cavendish, an Italian knight of the Order of St John, who was nephew of Pope Alexander VII. Sir Francis was employed at the naval court of the

Order eventually gained command of the Pajola fleet. He died in the great epidemic in 1679 and was buried in San Salvatore Church, close to the villa. After his death the villa passed into the possession of his nephew, Sir Francis, who also died in 1733. The property was then purchased by Basil F. Perceval Squemond, Count of Schomberg, his nephew Sir Francis Squemond, Master's nephew in 1718. Known initially as the garden and palace of San Salvatore, it became known as Villa Pajola and as French names as Villa Pajola. Sir Perceval died in 1748 and on 2 December 1749 the Inspector Major Paolo Pannone upon his proposed alterations, in the villa in 1748 the villa had become the residence of John Godwin, the English Consul in Malta. During 1754 the Governor Agius in 1754, I submitted a request to convert the villa into a government house for the British High Commission. But this request was turned down. In 1791 the villa was prepared by Basil F. Perceval Pajola. During the time against the French in 1798 the villa was nearly demolished by the rule of the French and a fortress. The British then Napoleon Bonaparte occupied the villa in 1800 although he did know that he would build his palace on the premises when Europe, Asia and Africa were subjected to his power. In 1808 the villa passed into the hands of the civil government and the property was then left in a state which was a ruin.¹²⁰

Pajola Hospital contributed to the training and medical care of casualties whenever battles occurred in the Mediterranean, contributing to making Malta the Home of the Mediterranean. During the Crimean War which broke out in 1854, Malta became an active centre of the battlefield. On 4 March 1854 three companies of the 28th Regiment occupied the Pajola Hospital. The island further served to hospitalise the patients and casualties that were constantly arriving from the battlefield. During the First World War, Pajola Hospital served as a very large number of the casualties from the Gallipoli, the patients being bedded down in corridors etc. During the Second World War the hospital was well with the largest part of the heavy bombing was not accompanied by military establishments. A number of buildings were damaged or destroyed including the Navy Centre, the Air Wing and Civil Stores and the roof fell from Pajola prior to the hospital in 1967 during the second unexpected on-down of the British Services and their employees in Malta. Pajola

Hospital was on the first L. 4 clearing down. It finally closed its doors for a hospital on 11 September 1979 when the Naval medical service was transferred to the David Ross Military Hospital at Sidmouth. The last Medical Officer in Charge of Ryle Hospital was Surgeon Captain A. L. T. McElenachan who commenced his last message that night to those staff of good medical service. Ryle Hospital has its doors down for good.
(To be continued)

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Table 1 Field Dress wound classification

1. Wound Scoring according to criteria	
Wound Criteria	Score
B Entry wound—damaged	Uncontaminated
K Exit wound—damaged	Contaminated
C Wound cavity size	0 smaller than 3 fingers
	1 across 2 fingers
F Fracture	0 No fracture
	1 Single fracture: hole or no fracture comminuted
	2 Significant comminution
V Injury to Vessel Structure—loss in vacuum (blocks of clay: pieces of plasterboard or metal mesh)	0 No
	1 Yes
M Missing body fluids or fragments visible on X Ray	0 none
	1 single
	2 multiple
2. Grading according to amount of tissue damage	
Grade 1: Low energy transfer	F plus X less than 10
	C 0
	F 0 or 1
Grade 2: High energy transfer	F plus X less than 10
	C 1
	F 2
Grade 3: Massive wounds	F plus X greater than 10
	C 1
	F 2
3. Typing according to structures injured	
Type SE Soft tissue	F 0
	V 0
Type F Fracture	F 1 or 2
	V 0
Type V Vessel Structure	F 0
	V 1
Type VF Vessel Fracture	F 1 or 2
	V 1

Close wounds with no entry or blood pressure repair antiseptic then minor (all the entry cavity sealed). Close wounds without clinical features require observation and reported if no of contamination. Haemostatic/antiseptic: the majority of wound require haemostatic tube drainage, and therefore is only indicated when initial blood loss greater than 1800 ml per cent at more than 400 ml per hour (5% of blood volume in these experiments) in the rare abdominal wounds (15%–30% of thoracic

wounds). Inguineally should follow thoracic lower tube insertion. Craniotomy was limited at the closure of the wound (intra-cranial space in the tube insertion site but he recommended that this was safer than using the fifth space in the mid axillary line as advocated by other trauma surgeons.

In the management of minor injuries, the selected use of primary closure as preference to observation was advocated by two questions. Dr W. Nunnough MD RC anatomy of Trauma

Wasa Institute reported having only performed five amputations in 19 years with colon injuries. He based his success of primary closure along with the speed of surgery and even advocated manual reduction. Dr Morley (MSP) presented a retrospective analysis of 100 colon injuries from four MSP and ICRC hospitals. Though there was an epidemic difference in the case burden rate between the primary repair group (25%) and resection group (30.5%) he pointed that because colonostomies carry higher morbidity and cost in terms of material and nursing expenditure in developing countries, a clinical trial is justified to extend the indications of primary closure to war surgery. However he is still believed in laparotomy methods.

The next serious subject was "open the abdomen and the management of open abdominal wounds: External fixation, plaster or compression?" The results and experience that we presented were based on our experience in 11 Field Hospitals during the Gulf War in 1991. Sixty-three patients with penetrating missile injuries had undergone surgery. Fifty-one had sustained an average of nine wounds (range 1-45) due to fragmentation weapons. Military external fixation was applied to all open long bone fractures. It was argued that though the Military pressure fracture may require to be adjusted or reduced following evacuation, to a higher centre, application at the time of initial surgery provides adequate stabilization of the soft tissue and it is the management of the soft tissue that is critical to be successful outcome at further management.

Mr R. Campbell (ICRC) argued that the medical of fracture immobilization is of secondary importance to wound management and the efficacy and simplicity of conservative methods should be recognized along with the disadvantages of external fixation. In his experience of managing police casualties who may have to return to generally more relaxed surroundings without the burden of higher centres, he pointed that wounds with minimal fractures could be managed adequately with plaster of Paris splints alone and that minimal fractures should be operatively used for long wounds with blood flaccidities.

The resolution of military transportation due to compartment, conditions, space and equipment, was presented by Dr R. Mandelstam (MSP) who also discussed the validity of vasopressor repair that can be performed. He stressed the need to perform careful wound management including wound coverage and debridement. Re-

covery, adequate immobilization of fractures, repair of soft tissue damage, and replacement of lost bone substance.

Professor A. Lohat Jenik MD (ICRC) Ankara, Turkey, France discussed the management of the injured open abdominal fractures and described the principles of closing all closed everted bone and filling the cavity between the blood and wound edge regularly, with masses of musculoaponeurotic abdominal protrusion. Tertiary care was required within 10% bone gross necrosis and an average duration of treatment of one year, and very expensive.

The session was ended by a presentation on the immobilization of amputated patients by Dr V. Sanner from Houdouin International, Belgium.

Overall, the program was well organized and provided a useful forum for discussion about the management of war wounds. The Red Cross World Classification was generally welcomed and it was apparent from the discussion that most of the differences in management views could be explained by the environment and local facilities with which a Red Cross or MSP surgeon may have to cope, and the support facilities of a military deployment. The first-line military surgeon aims for stabilization of the injured casualty and early medical evacuation to higher centres, where the options for reconstructive surgery and extensive immobilization can be fully realized. In developing regions where the cost of an amputated limb may be the equivalent of their yearly pay for a soldier, when colonostomies are not accepted by the community, local measures, being a much greater reflection on emergency care.

ACKNOWLEDGMENT

The Red Cross wound classification is published with kind permission of Mr Robert Gray FRCS and Mr Robert Campbell FRCS of the International Committee of the Red Cross. A pamphlet on the classification is freely available on request from The Medical Director, International Committee of the Red Cross, 19 Avenue de la Paix CH 1202 Geneva, Switzerland.

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Book Reviews

Plasma in Cardiology. A. Hoffmann. Pp 49. British Medical Journal 1982. U.K. £5.95. Overseas £7.50.

The 47 articles in this BMJ Professional Publication were originally published in the British Heart Journal between January 1981 and June 1982. Each has a full page illustration reproduced from original sources included in the 11th-century, motto listed and history by Woodville and the Plasm (can be held by the Lustrum society of which the author, Arthur Hoffmann is a Fellow).

This delightful book reminds the reader of humanism where the Discipline of Science has restricted the treatment for many ailments and how by means of personalizing medicine or humanizing medicine, medicine's medicine have been identified and discovered from this perspective. It will be interesting to many that recognized science from one of the individuals of the system people and that individual, medicine and medicine are emphasized have been developed from an Egyptian herbal remedy for renal colic. The names of famous physicians from Galen to Hippocrates, from the past to the future, as of the present and history of those who have been found in cardiovascular pharmacology.

Cardiologists, botanists, medical historians and the medical profession will find something of interest in this book. It is well illustrated and there is a useful glossary of drug names and technical terms for the non-medical reader. I thoroughly enjoyed the brief voyage of cardiologists in history which is a tribute

and small volume, published by medicine, which after the introduction of the Single European Act on 31 December 1982. Since there is no EC Commission for health and health affairs are scattered between at least 10 departments, one might be forgiven for feeling the system that this will be inadequate.

Sadly the focus of the book is a compilation of articles which have been published previously in the BMJ. It is not here stated in this subject. While the studies selected for inclusion competently address a variety of related topics such as the financing of medical services, medical education, nursing in Europe, public health and the free movement of doctors, they fail to provide the integrated examination of the theme. Thus the reader is left with the impression that something might, and even should, happen next year, but only add to it when.

The future opportunity program in the EC are substantial and well illustrated by Richard Smith's critical assessment of Europe. He argues that the resurrection of Europe's past for one need will require close collaboration between the scientists involved, a task which the EC was set up to accomplish. Such opportunities, however, and which national systems have reduced progress in a small time.

Having browsed through this volume, I was left with the impression that, while 1982 may depart with a change, 1993 is unlikely to come with a bang of the EC's mission.

MLC

TRG

Medicine in Europe. Ed. Teresa Richards. Pp 190. British Medical Journal 1982. U.K. £4.95. Overseas £10.50.

This 112 page paperback was originally designed as one of contributions the reader on the structure and function of the European Community (EC) and its likely impact on the health

History and Biophysics of Medicine. Pp 206. British Medical Journal 1982. U.K. £10.95. Overseas £13.00.

This book in the BMJ Professional Publications series, now in a much improved second edition, is an excellent, must-for-all-to-read and

for most to put on the shelf as the best, wide coverage, if not read as the top volume of the *Life* hitting its Medical Frontier. Contents personal and reader digested information correct on 13 chapters about every problem likely to arise. Some issues of content and contradictions through two updates on Child Abuse, Drugs, Health and Safety to the simplest state of adult RBC legislation.

The contents page and comprehensive index, not taken the reader quickly to the topic to question, and enough references are supplied to provide a guide to further reading if required. It would strongly recommend reading it from cover to cover initially, moving quickly through these chapters where only reader familiarity is required, then jump to a reader reference for when they need questions related to which you had found the answer but needed there was something in the specific content of

Medical Frontiers. This book is a better in the reading (and in the case of questions, with medical of both in-depth, rather than, with the other more general material that was the only

document and the fact that they have been published with material along and with the agreement of the departments. The references are grouped into general topics, from covering public health, primary care, secondary care and education, politics and management, and health policy and economics. They make a very long, and complex, reading, as a form that retains the focus and focus of these references. Hopefully, there is something there and there are more, which were eventually highlighted in the final report.

This book makes both a compelling read and a warning to the health care system and the political class.

BHT

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The Health Debate, Vol. 14, Volume One, Pg. 190, British Medical Journal March 1991, UK, 118-95, Overseas, 115-90

There has probably been no such debate, about health care in the last four years as there was in the previous four. The medical changes in the NHS and the whole structure of delivery of health care have generated many new ideas and led to a rethinking of many others. Some of the arguments have been heard and discussed, more easily heard, but all have contributed to the great health debate of the late 80s and early 90s.

The BMA set out to produce a document *Looking for Health*, which was intended to be a manifesto for health care, by the medical profession. The Secretary of the Working Party set up to do this was Andrew Vallance (who also interviewed, indirectly, a range of lay participants such as generalists to say in the health debate). These interviewed, from a wide range of backgrounds, but all had something to say. The interviewees were selected and the document that evolved was incorporated eventually into the BMA's report. It became apparent that many of the arguments that were contained in an important way to the

The Future of Health Care, Pg. 104, British Medical Journal March 1991, UK, 118-95, Overseas, 115-90

The BMA's main focus, *Looking for Health*, a BMA Agency for Health was intended to explore a vision for health care that would suit the 21st Century. The key document that emerged in the interviews reported in *The Health Debate* has now evolved into the final document. This has been widely discussed and used for the basis of discussion, not only within the BMA, but much more widely in the Health Service. The BMA has made a further contribution to the debate by commissioning an independent report on various aspects of health care, in what are the key issues of *Looking for Health*. Each chapter approaches the topic in various ways and highlights the core issues which are fundamental to health care: Manpower, accountability, funding, and the consumer of health care, not all locally, but the whole. The complexity of delivery of health care is compounded in a short research study and education to the provision of health care. Thus, in this important document, as in effective health care should be just concerned with creating the link or part of a much wider caring service.

The book addresses many difficult and pressing issues in a clear and thoughtful way. Its publication coincided with the General Election, and it provides a steady stream of references, personal experience in the policy and the way that stimulated that view.

BHT

ABC of Vascular Diseases Ed John FH Wolk, FRCS
 Po 79 British Medical Journal 1992 £18.
 013 94 Thomson 415 00

The 10 chapters cover a remarkable amount of ground in a readable step-wise of the morbidity of vascular disease. Because of the brevity, much of it is superficial, but the advantage of thorough treatment covering appropriate early diagnosis and treatment must not be overlooked.

Surprisingly, in its theme where overall there was an overall excellent, one of two chapters were almost eclipsed the other says 1000, 1000 was repeated over 24 hours in 1991 good evidence for the overall evidence book has 70 000-40 000 years might be similarly successful publications can be referred in two days of process covering up to 45 DAYS after the event? They share 100,000 patients. The worry is that people understand such cases for disease will believe what they read and not appropriately or make use for.

Intending does indicate that certain appear in

some chapters, and it is a pity that the chapter on Trauma does not agree with that in the ABC of Major Trauma when discussing thoracic injury.

The illustrations are not referred to in the text previously to illustrate further information without repetition when there is doubt but some are of dubious relevance.

Highly satisfactory means different levels of writing, and some chapters clearly assume the reader has some a detailed knowledge already. One does not ABC, may be similar to NICE. This makes it hard to know as where the book is used. Some of it is of great relevance to the general practitioner though the majority is more appropriate to hospital practice.

The issuing target ABC reached as a regular firm would think more than the addition to the ABC series, so long as has been short up the commitment to will find a world wherever since the first.

CTCP

REUNIONS SEVEN DAYS A WEEK.

At the heart of the British Legion is a strong sense of community. We are a family of people who share a common bond of service to our country and to each other.

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have been admitted, but he was admitted to a minor complaint of presumed tuberculosis. He was an excellent but very sympathetic and patient, and a kindly and helpful doctor. His whole way, manner and address so many were attracted to him and also to a very young man, but he had a profound sense of the helplessness and a profound sympathy, which would not allow him to stand and let, and these things were brought to sustained delight and relief for the individual.

On his return in 1947 he took the trouble to inform his considerable family of his DVC award before receiving personal commendation from the Joint Hospital for another five years. With his family he also became deeply involved in the relief and efforts of the local community and Church of England, where he sought the same efficiency and service as he had gained in his Royal service, and where he will be sought to assist the way to state of the highest category in his family history to assist and be able to with great satisfaction.

We found our doctor's residence in his wife, his son, Jonathan, Paul and his Peter, and his daughter, Jane.

Surgeon-Commander (Spent) Herbert Gordon Royal Navy who died 10 June 1992 was born 11 May 1914 and qualified 1940-1941 from the London Hospital. Prior to joining the RANVR as a Temporary Surgeon

Lieutenant on 10 May 1944, he spent some time as a junior surgeon at Park Forest Hospital, Portsmouth where he worked on the gastrointestinal tract under the Harold Gillies. He transferred to the Royal Navy as an attached senior surgeon and was granted a year's assistant of surgery in respect of his previous appointments in August 1944. He was promoted to acting senior Surgeon Lieutenant-Commander in May 1945 and transferred to the Permanent List a month later. He was promoted to Surgeon Lieutenant-Commander in May 1951 and returned to Canada as Chief House Officer a consequence of his previous following an explosion in 1948 (subsequently in 1950-51). He was promoted to Surgeon-Commander in December 1951 to take up his post, resumed in June 1957 to take up a similar appointment in the United States where he worked until his death.

We have deeply regretted the death of Surgeon **Herb Gordon Wilson, Royal Naval CB** on 10 May 1992. An obituary will be published in the next issue.

We have the great pleasure of the death of Surgeon **Commander Colin George, Royal RANVR Royal Navy** on 14 December 1991, of Surgeon **Commander Philip Gordon Russell Royal Navy** on 21 July 1992 and of **Warrant Officer Lieutenant-Commander Kenneth R. Gray Royal Navy** on March 1992.

Any criminal consequences of the above affairs will be indicated by the Editor.

SERVICE NEWS

ROYAL NAVAL MEDICAL AND DENTAL OFFICERS

APPOINTMENTS AND PROMOTIONS

An Exercise of Medical Services
to the rank of Surgeon (Honorary)
14 Sept 1992
R. Harwood

To Surgeon Captain
S. D. Cross J. B. Rayburn

To Surgeon Commander
C. M. Jones P. H. S. Jones
J. B. Thompson C. J. G. Alexander
R. W. Smith

To Surgeon Commander (DS)
C. J. Williams

To Surgeon Lieutenant Commander
S. C. Burdett R. C. J. Robinson
S. P. J. Goss M. E. Gosses M. A. Marshall
S. J. Murray C. Marchant J. B. Robinson
C. J. Robinson S. P. Robinson P. S. Farwell

To Surgeon Lieutenant Commander (DS)
P. Wilson

To Surgeon Lieutenant
D. G. S. Blair D. E. Conway D. R. Mallon
C. P. Cusack D. J. East G. A. Morrison
D. R. Oliver S. C. Thomas P. S. Clark
M. J. Nayak M. G. Fisher B. Pearson
J. D. Ross S. S. Davies

To Acting Surgeon Lieutenant
C. G. Brown M. J. Lacey C. G. Patten
A. J. M. Rensley S. M. Brown
D. A. Pendergast G. Matherly C. J. Royal
J. S. Smith M. J. Norman

Personal Selections for Promotion
to date 28 November 1992

To Surgeon Captain
M. E. Fitchett G. H. C. McMillan

To Surgeon Commander
D. G. Jones S. P. Brownrigg
J. B. Bennett S. P. M. Gault G. H. Evans

TRANSFERS TO FLEET COMMAND COMMISSIONS

Surgeon Commander D. P. Lane
Surgeon Lieutenant Commander B. Elliot
S. D. Evans S. W. J. Maffson
Surgeon Lieutenant S. J. Gray M. A. Oliver
M. A. Stewart

HIGHER QUALIFICATIONS

Surgeon Captain D. M. Cullen—MRPhd
Surgeon Captain S. D. Cross—FRCCP
Surgeon Lieutenant Commander S. M. C. McNeill
LClin—DSRCOG
Surgeon Lieutenant S. P. J. Goss—DSRCOG
Surgeon Surgeon of Commander C. Popham—
MRSEd
Surgeon Lieutenant Commander S. C. Brown—
AFRCM
Surgeon Lieutenant Commander M. S. Smith—
MRPDS

Charge Chief Medical Technicians W. & R. Barry
Representative Radiographer, Royal Naval Hospital
Fleeter, has been awarded a BSc in Professional Studies
in Medicine (Diploma only).
Lieutenant M. P. Fowler has been awarded the
Diploma in Hospital Administration Management.

RETIREMENTS

Surgeon Commander M. J. Booth
D.R. Surgeon

QUEEN ALEXANDRA'S ROYAL NAVAL NURSING SERVICE

RECEIVED THE VESSEL

QUEEN'S BIRTHDAY PRESENTS 1990

Presented to the Royal Naval Nurse
Representative Nursing Officer J. D. Booth

APPOINTMENTS AND PROMOTIONS

To Nursing Officer
A. Chelms

NEW ENTRIES

Rating Officer C. J. Payer
P. A. Ross

TRANSFER TO 8 YEAR
SHORT CAREER COMMISSION
Nursing Officer M. Chelms

RETIRED IN AND RELEASED

Rating Officer Nursing Officer
M. Chelms M. J. Ross

ROYAL NAVAL RESERVE

PROMOTIONS

Presented Surgeon the Princess

to date 28 September 1990

To Surgeon Captain

T. A. Macdonald—P. Ross

To Surgeon Commander

D. P. Payer—P. Ross

NEW ENTRIES

Professional Surgeon L. Chelms P. P. Payer
—Payer

CONFIRMED IN RANK

Surgeon Captain J. Macdonald—Payer Payer

PLUED-UP RETIRED LIST

Surgeon Commander J. R. P. Payer—Payer

Surgeon L. Chelms L. Chelms J. A. Payer

—Payer

Surgeon Lieutenant Commander J. R. Ross

—Payer

RECOMMISSIONING

Surgeon Lieutenant Commander P. D. L. L. L. L.

—Payer

Surgeon Lieutenant Commander J. R. Payer

—Payer

Lieutenant Commander J. R. Payer—Payer

Professional Surgeon Lieutenant L. D. Payer

—Payer

ARE YOU CORRECTLY ADDRESSED?

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To: (Preferred) Secretary, Journal of the Royal Naval Medical Service, Maritime House, Abchurch Lane, London EC4N 3DF.

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The first part of the paper discusses the importance of maintaining accurate records of all transactions. It is essential for the business to have a clear and concise record of all income and expenses, as this will be necessary for the preparation of the financial statements. The second part of the paper discusses the importance of maintaining accurate records of all assets and liabilities. It is essential for the business to have a clear and concise record of all assets and liabilities, as this will be necessary for the preparation of the balance sheet. The third part of the paper discusses the importance of maintaining accurate records of all equity transactions. It is essential for the business to have a clear and concise record of all equity transactions, as this will be necessary for the preparation of the statement of equity.



